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Textile World

A McGRAW-HILL PUBLICATION

JANUARY, 1938

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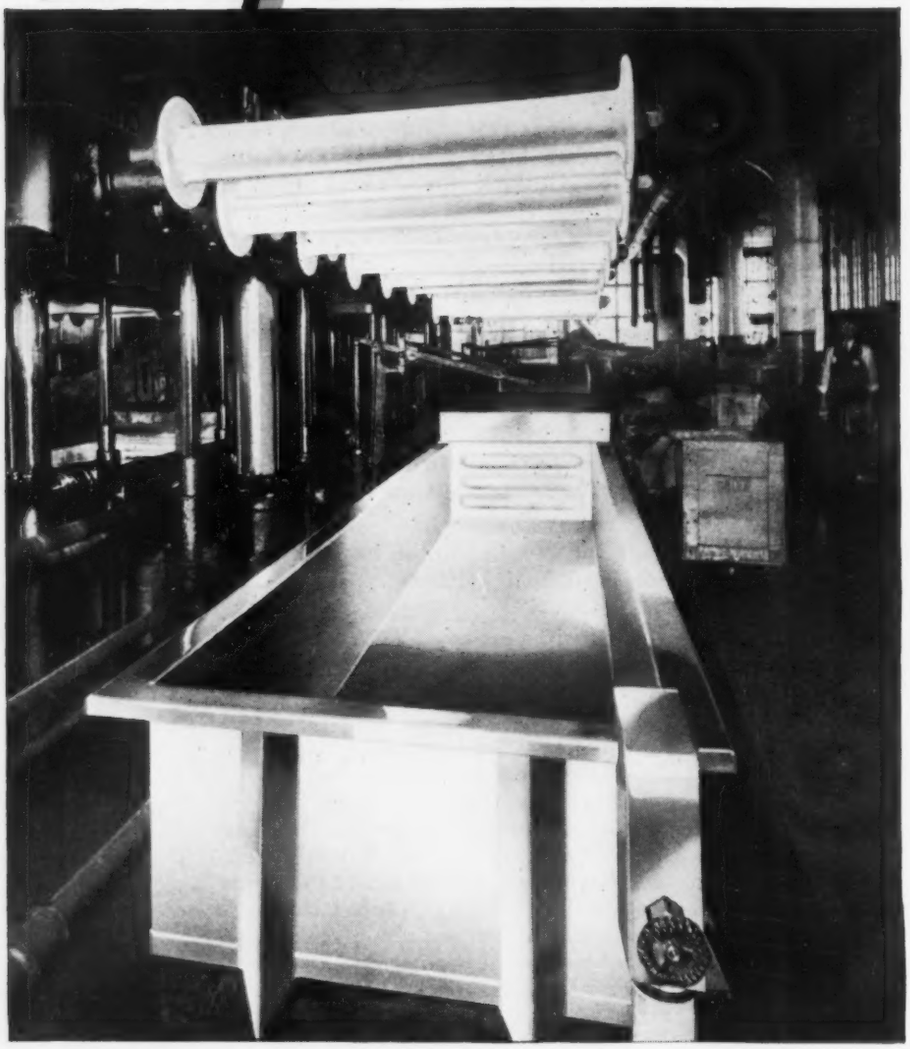

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Textile World

JANUARY, 1938

DOUGLAS G. WOOLF, *Editor*

A Simple Program for 1938

THIS is stock-taking time again. It has been our custom to take an "editorial inventory" of the textile industry on the first of the year.

If we should make any comparison with this time last year, the result would be a headache. Then, the industry was in the midst of a boom. Now, it is in the midst of a depression. However, it has lots of company.

Furthermore, the situation isn't as bad as it seems. Despite the collapse in the latter part of the year, the remarkable performance of the first half resulted in total textile mill activity for 1937 approximating that of 1936—which was nearly 25% above "normal" (1923-25 average.)

In addition, the fundamentals of the industry have been unimpaired. There has been no important degeneration in labor standards such as we had in the last depression, no collapse in morale. To avert any such catastrophe is the industry's No. 1 task in 1938.

•

How can this be done? By the most obvious method: selling more goods and selling them at a profit. And the way the industry can do that is by (1) promotion, and (2) statistics.

On the first, it is unfortunately true that the average textile manufacturer thinks of promotion as something which is good for the other fellow but not suited to his own particular case. He is apt to think of it in terms of show windows, display advertising, and bill-boards. He doesn't realize that *promoting* the sale of his product is one of the continuing duties of *every* manufacturer. Every effort he makes to extend the sale of his goods is a promotional activity. In fact, in the staple goods field this development of new outlets, plus the insurance of satisfaction to both the immediate and ultimate consumer, represents the real promotion job. In this job, the associations and institutes should play more of a part than they have in the past.

•

Now as to our second recommendation: The main reason goods are sold at a loss is lack of knowledge. The remedy is better statistical information. We have dwelt on this point during the year just closed and we intend to continue our insistence during 1938.

The several branches of the industry have done varying sorts of jobs in this direction. At times, some of them have been excellent. Too often, there has been no continuity to them. Perfectly good programs have been scrapped for very silly reasons. Also, the statistics have not been related to those of groups which either sell to or buy from the industry concerned. Without this integration, any statistical activity is a thin reed upon which to lean.

Here, then, is a very simple textile program for 1938: promotion and statistics. And the best way it can be tackled is by some sort of coordination of the efforts of the *entire* industry in all its branches.

That's our old hobby again. And our New Year's resolution is to ride it hard until something is done about it!

What About Congress?

A brave attempt to gaze into the future of this session

By PAUL WOOTON
Washington Correspondent, TEXTILE WORLD

RARELY HAS a session of Congress convened with more legislation before it of important interest to the textile industry than the session which met January 3. There is the farm bill with its threat of a processing tax. Wage-hour legislation is not dead. Taxes are being revised so as to remove incumbrances on expansion of plant and modernization of equipment. An effort will be made to supplement the anti-trust statutes so as to make it more difficult to hold prices at fixed levels.

Farm Legislation

Such divergent farm bills were passed by the House and by the Senate that the important features of the legislation are being re-drafted in the conference between the two houses. As this is written, no one knows on which points the Senate conferees will yield or on which the House conferees will make a concession. One thing is very clear, however: The compromise measure is certain to call for the expenditure of more than $500,000,000. It will take about that amount to continue the payment of soil conservation benefits. It is certain that other inducements must be held out to the farmers who will be required to restrict acreage. Conservative estimates of the additional amount that will be required vary from $250,000,000 to $400,000,000.

There is every reason to believe that the President will insist that Congress make provision for this additional amount. Many think this means that there must be recourse to processing taxes. While there is doubt as to the final form the bill will take, it is quite clear that something will be done that will increase the price of cotton. There is no longer talk of a parity price for cotton but of a price based on parity. Whatever formula may be adopted, in view of the state of the Treasury and the state of business it is likely to be conservative and of a character that will not conceal from the farmer any loss of the export market for his cotton.

Unquestionably any bill passed will contain provisions for additional research looking to the development of new uses for cotton. The Senate bill provides for the establishment of a southern regional farm products utilization laboratory at which the "chemical, physical and physiological" properties of cotton and its by-products will be studied.

Wage-Hour Legislation

Resurrection of wages and hours legislation is made easier because it has passed the Senate. In the House the chances to block legislation are few. If 218 members would rather vote for than against any bill it can be brought up over the protest of a majority of any committee. This means that if something in the way of compromise can be accomplished another wage-hour bill can be brought before the House. The President is understood to favor a very simple measure. Most southern members take the position that they are not against the establishment of labor standards—that is, a wage below which no industry would be allowed to pay. If a differential were provided, they probably would accept a simple bill with low minima. Their contention in that connection is that this would eliminate most of the abuses and would allow gradual adjustment to start. Ultimately a higher minimum might be accepted. It is difficult to see, nevertheless, how any bill could be written that would satisfy all parties at interest. Any legislation that is likely to be recommended by the committee is certain to face a hard fight. The subject is certain to be one of constant and acrimonious discussion during the regular session.

Undistributed Profits Tax

Revision of the undistributed earnings tax is of significance to the textile industry in particular because it promises to stimulate modernization of equipment. One of the explanations for the headway Japan made in the introduction of its manufactured products throughout the world was its use of improved machinery. More recently it has developed that Germany's progress in Latin American markets is explained, in part, by the fact that there is little obsolete machinery in its plants. The importance which modern equipment is playing in the export field has had the effect, Washington is hearing, of arousing more interest in the subject among American manufacturers. In opposing the undistributed earnings tax one of the principal arguments has been that it prevents modernization and expansion of a plant. This has been said so many times and so eloquently that the removal of the tax, some expect, will be the signal for a start in the removal of obsolete machinery. It is assumed that the textile industry will be no exception.

Anti-Trust Legislation

While the textile industry has nothing to fear from legislation intended to break down fixed prices and identical bids, it will come into the debate of the question as it represents the antithesis of an industry where price is maintained without great regard for demand. Conditions in the textile industry will certainly be compared with those in steel, cement, petroleum and other industries where prices do not fluctuate greatly. Doubtless those who will oppose the Administration's program will contend that conditions are better in those industries than in an industry where prices respond quickly to every change in demand and other conditions surrounding production.

What About 1938?

A look into the future through the eyes of McGraw-Hill editors

ONE HESITATES to stick his neck out alone this year. Consequently we have sought safety in the company of a number of other necks—those of McGraw-Hill editors, whose publications represent the major branches of business. Here are their thoughts on 1938:

GENERAL BUSINESS

Events of the last three months have occurred with a strange disregard for experience and precedent. Nevertheless, developments of the next 12 months should prove that the business man who does not plan his program in preparation for a substantial increase in the volume and activity of business in 1938 will be responding to fear impulses rather than translating sound thinking into action.—GLENN GRISWOLD, publisher, *Business Week.*

TEXTILES

Total textile mill activity for 1937 has been about equal that of 1936. Since the latter was itself the highest previously on record—25% above the 1923-25 average—this means a fine performance this year. For 1938, the textile outlook is one which is not too easy to define at this writing. So much depends upon the behavior of the stock market and the course of general business. My own belief is that the first part of the year will be slow, with a decided pick-up in the latter part, and that total activity for the year should rate at approximately the high level which has characterized 1936 and 1937. Obviously all predictions made now for 1938 must be hedged carefully, pending clarification of the present situation.—DOUGLAS G. WOOLF, editor, TEXTILE WORLD.

CONSTRUCTION

Figures for the year, now substantially complete, show that the construction total for 1937 increased to nearly 60% of normal, and this wholly through a vigorous advance in private enterprise, which occurred in spite of the slump that slowed up operations in the latter part of the year . . . What is ahead in 1938? The general picture is promising in view of the momentum of new enterprise and the large unfilled requirements due to obsolescence in all departments of construction.—F. E. SCHMITT, editor, *Engineering News-Record.*

"The year 1938 should not be a year of depression as we know the meaning of that word. The present period of recession, permitting certain necessary corrections in commodity prices and inventories which grew too rapidly in 1937, may last through the first quarter, but no longer."

JAMES H. MCGRAW, JR.
President and Chairman of the Board, McGraw-Hill Publishing Co., Inc.

ELECTRICAL INDUSTRY

The year 1937 with few exceptions will show substantially greater billings for the electrical manufacturing industry than 1936. Budgets for manufacturing volume next year run all the way from 80 to 120% of 1937. Very few are over '37, however. A weighted average might show budgets for 1938 approximately 10% below 1937. Manufacturers really feel that in general 1938 will be better than the budget. Perhaps that is one reason for the lack of pessimism.—S. B. WILLIAMS, editor, *Electrical World.*

CHEMICAL INDUSTRY

Put the 1937 business curve for the chemical process industries in front of a mirror and you will get a reflection of which I think we shall see in 1938. The toboggan that started last August is already flattening out and the climb back should begin in the late spring or early summer. Net result, therefore, is total business for 1938 not far from that for 1937.—SIDNEY D. KIRKPATRICK, editor, *Chemical & Metallurgical Engineering.*

METAL-WORKING

1937 was an up-and-down year for the metal-working industry—up to dizzy heights during the first half, discouragingly down in the last quarter. What 1938 will be like is anybody's guess, but the hope is that it will be the reverse of 1937. At any rate it will probably be low during the first part. How fast and how far it rises during the latter part depends a lot on world conditions and on what Congress does to release business from the present tax laws.—K. H. CONDIT, editor, *American Machinist.*

COAL MINING

Since the low point of 1932, the production curve in bituminous coal has been moving upward. During the first half of 1937, cumulative output was 11.7% ahead of the corresponding period in 1936; since then, the percentage of increase has been reflecting the decline in general business activity so that for the first ten months, the gain in production was 7.1% over January to October, inclusive, 1936. If 1929 is taken as 100, the index of production for the first ten months of 1937 was 78.4. The 1938 index may be expected to follow closely indices of general business activity in the new year.—S. A. HALE, editor, *Coal Age.*

POWER

In 1929 energy output of America's public-supply power stations was 97.4 billion kwhr. For 1936 it was 113.6 billion kwhr. The 1937 total will be about 121 billion, in spite of the business recessions in recent months.—PHILIP W. SWAIN, editor, *Power.*

FOOD INDUSTRIES

It appears that the earnings in the second and third quarters of 1937 will be an index of the net earnings of the industry for 1938. As a whole the food industries will probably earn about three-fourths as much in 1938 as they did in 1937.—L. V. BURTON, editor, *Food Industries.*

AVIATION

The record of 1937 shows a sound and steady growth for the aviation industry on all fronts and, barring any unexpected internal economic difficulties or any wide-spread international conflicts, it should continue to increase during the coming year.—S. PAUL JOHNSTON, editor, *Aviation.*

First Cheese, Now Fish

A complete textile menu is forecast for the future

By JACK CARD

JUST GIVE the scientists time and there will be a whole textile menu.

"Cheese wool" started it all. At first, we didn't think so much of that nick-name. It's real title, Lanital, seemed much more dignified—and we also liked to refer to it as a product of casein, thus fooling the layman.

But now that another article of diet is to be used as a fiber source, we can see possibilities of an entire nomenclature based on food.

The latest is fish. Professor Mecheels of Munich-Gladbach recently discussed, in a lecture in Berlin, the production of a synthetic wool from albumen, with fish being suggested as a possible source. Although still in the experimental stage, he stated that there was every reason to hope for successful developments.

Referring to the production of fiber from casein or milk albumen in Italy, the professor stated that there is more solidity in fibers obtained from fish albumen, also that the latter is more viscous than that extracted from milk, and, because of the greater size of its molecule, more adapted for fiber production. A subsequent news-item indicated the possible use of a fish-albumen fiber in "Soviet Russia's four-year-plan for the so-called animalizing of staple fiber," and added that "the fiber resulting from fish albumen and cellulose is said to possess the same warming properties as natural wool and to exhibit excellent behavior during dyeing."

At the moment, we are not prepared to take sides in the great controversy of fish vs. milk as a source of textile fibers. We are waiting to see which way the cat is going to jump, so to speak. (*Note to Editor:* We know that's an awful pun, or whatever you want to call it—but it fascinates us, and if you cut it out, don't run the article at all.—*Author.*)

As a matter of fact, we had almost overlooked another food-stuff which also served as a source. Remember the gelatin process of "artificial silk" manufacture?

Here's a possible shopping list milady may be carrying soon:

Sports dress from oysters.
Lingerie from Borden's Grade A Milk.
Hosiery from roccuefort cheese.
Scarf from halibut.
Cloak from Jello (orange flavor).

The promotion possibilities of this textile menu make us dizzy. To preserve our own mental balance, we hereby yield all rights to the idea. Anybody who doesn't mind going nuts is welcome to play around with the thought.

However, don't forget that some people are allergic to a mixture of fish and milk!

TEXTILE WORLD in New Dress

Textile World is constantly preaching to its readers modernization of product. We point out the advantages to be gained by continued improvement, and the dangers which threaten the manufacturer who permits his product to become static. We have tried to practice what we preach—and have constantly reviewed our own product in order to make sure that it was kept up to date.

The latest revamping goes into effect in this issue. Under the direction of a specialist in the layout of publications—a man who combines artistic temperament with practical knowledge of type and layout—the publication has been re-styled. A new body type adds greatly, we believe, to the readability of the paper. New heading type adds to its beauty. General rearrangement and improvement of departments eliminate interruptions of what our style consultant calls the "flow" of the publication. The net result, we hope and believe, is a more pleasing appearance and at the same time greater ease of reading.

We present the 1938 model of Textile World to our readers with a reminder that we believe modernization of product pays in all branches of commercial life.—Editor.

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TEXTILE MANUFACTURING WORLD.

SEE SPECIAL OFFER TO SUBSCRIBERS, ON THIRD PAGE.

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1888—1938

Textile World *Celebrates One Of Its Two Birthdays*

THIS month TEXTILE WORLD celebrates one of its birthdays: the fiftieth anniversary of its first appearance under the present title. As will be noted from the accompanying reproduction of the first page of that venerable issue, Vol. 1, No. 1 was published in January, 1888. The complete title was *Textile Manufacturing World*, but it will be seen that *Textile World* was high-lighted as the real name. The publishers were Henry G. Lord and Walter B. Guild. The former is still actively connected with the publication, as vice-president of McGraw-Hill Publishing Co., the present publisher of the paper.

We referred to this as "one" of our birthdays. The other dates back to 1868, when *Manufacturers Review & Industrial Record* was first established. That publication was absorbed by *Textile World* in 1895, and consequently 1868 represents the origin of our first ancestor. We shall celebrate the 75th anniversary of that event in 1943.

During that long span of years, many important happenings have occured in the life-story of this publication. A major one was the merger with *Textile Record*, one of the founders of which had been Frank L. Nagle. Mr. Nagle, also, is still active, being chairman of the board of the Bragdon, Lord & Nagle Division of McGraw-Hill. Mr. Lord and Mr. Nagle share between themselves 110 years of textile publishing experience.

An 1888 Pledge

We feel particularly honored to reproduce below the pledge made by *Textile World* in its Vol. 1, No. 1:

"This paper has not been organized to boom any particular shop, firm, or business interest; it has no entangling alliance with any, nor any particular hobby to ride; it will endeavor to advocate whatever will be for the best interests of textile manufacturing in the United States, and recognize excellence wherever it is shown, whether in men, machinery or methods, without fear or favor."

Whatever success has come to TEXTILE WORLD through the years has been due primarily to its attempts to fulfill that pledge.

When the first issue of TEXTILE WORLD *came from the press in Boston, in January 1888, no one could have foreseen the wonderful development and the changes in the textile industry during the half century that has elapsed and during which time* TEXTILE WORLD *has been more than the mere chronicler of accomplishment. But I do not like to think of this 50th anniversary as a milestone for complacent review of the past. It is only another taking-off place for what I hope are many more years of opportunity and service by a grand old and ever young publication to a great industry with which it has been my privilege to be associated for a life-time.*

Henry G. Lord

Off-Weight Drawings

Avoided by simple method for determining required cotton-sliver size at any regain

By E. H. HELLIWELL

PRACTICALLY ALL cotton mills use some method of correcting weight of picker laps to regain. To a certain degree all of the different systems in use accomplish their objective of determining and making due allowance for the moisture contained in the laps. The better systems indicate directly the total weight of lap and rod required for the moisture regain prevailing at the time of weighing. These corrected weights can be read easily by the picker tender. Adjustments and rejections of off-weight laps are made with tolerances based on corrected weight. Results have justified the use of these regain corrections. However, unless moisture regain is given consideration in subsequent processes, the benefits of picker-lap correction are almost completely lost.

In carded-yarn mills, the next point for control and correction of yard weight is at the drawing frames. A 1 per cent. or greater, correction is possible by changing draft and crown gears. Many mills, including some equipped with lap-weight regain indicators, entirely disregard the effect of moisture regain on the weight of drawing sliver. The two main reasons for this neglect are: (1) It is assumed that the humidifying system will prevent large variations from standard relative humidity conditions. (2) The calculations involved in determining the necessary corrections are complicated and take time.

Variations in Weight

Extensive bone-dry tests have proved that even in rooms having controlled humidity, extreme changes in the weather can cause large variations in weight of drawing sliver. These variations may be due entirely to moisture regain. If this fact is ignored and gear changes are made to bring the weight to standard, the error is in the opposite direction when normal humidity conditions prevail. This makes another gear change necessary.

Thus it can be seen that an allowance or correction made for moisture regain in drawing sliver will prevent this see-saw, save the necessity of two gear changes, and avoid the off-weight drawing made during the period of time which elapses between the first and second gear changes.

The figures given in Table I show what 1 yd. of sliver should weigh at indicated regain, when the same sliver weighs 60 grains per yd. at 7 per cent standard regain. This is a different and less-confusing method than is usually followed in laboratory regain correction. The usual method corrects the actual weight per yard at the indicated regain to the required weight at standard regain of 7 per cent. Obviously there is an advantage in correcting a fixed standard weight to a variable moisture regain, instead of correcting a variable weight at a variable regain to a standard regain.

The table shows clearly how variations in humidity can cause variations in weight and why allowances should be made for such variations it close control of yarn numbers is required. Both the actual weight as found and the standard weight corrected to regain as shown in the table can be recorded. Any great difference between the two will indicate that a change of gears is needed.

All weights in grains per yard given in the table are derived from the following formula:

Corrected weight at indicated regain = Standard weight $\times$ (100 + % indicated regain) $\div$ 100 + 7% standard regain.

Example: A sliver weighs 60 grains per yd. at 7 per cent standard regain. Correct its weight to 9 per cent regain as follows:

60 (100 + 9) $\div$ (100 + 7) = (60 $\times$ 109) $\div$ 107 = 61.1 grains.

A constant can be obtained as follows:

Constant = Standard weight $\div$ 100 + standard regain.

Thus: 60 $\div$ (100 + 7) = 0.5608.

Applying this constant to the above example, we get: 0.5608 $\times$ 109 = 61.1 grains.

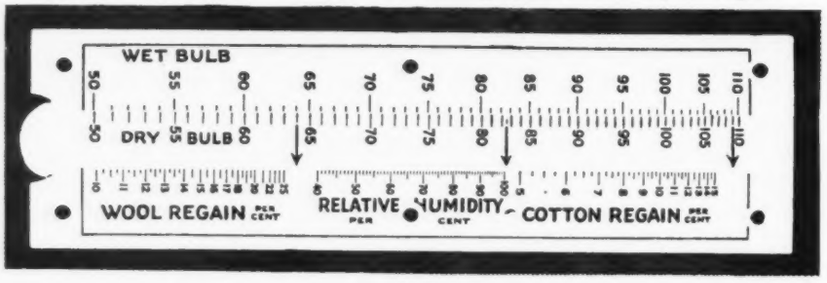
Any standard weight at any standard regain can be used and a similar

Table I. Required weight at indicated regain of drawing sliver weighing 60 grains per yard at 7% regain

Per cent Regain (Whole Numbers)	Per Cent (Tenths Over Whole Numbers) Regain									
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1	56.6	56.7	56.8	56.8	56.9	56.9	57.0	57.0	57.1	57.1
2	57.2	57.3	57.3	57.4	57.4	57.5	57.5	57.6	57.7	57.7
3	57.8	57.8	57.9	58.0	58.0	58.1	58.1	58.2	58.2	58.3
4	58.3	58.4	58.4	58.5	58.5	58.6	58.6	58.7	58.8	58.8
5	58.9	58.9	59.0	59.0	59.1	59.2	59.2	59.3	59.3	59.4
6	59.4	59.5	59.6	59.6	59.7	59.7	59.8	59.8	59.9	60.0
7	60.0	60.1	60.1	60.2	60.2	60.3	60.3	60.4	60.4	60.5
8	60.6	60.6	60.7	60.7	60.8	60.9	60.9	61.0	61.0	61.1
9	61.1	61.2	61.2	61.3	61.3	61.4	61.5	61.5	61.6	61.6
10	61.7	61.7	61.8	61.9	61.9	62.0	62.0	62.1	62.1	62.2
11	62.2	62.3	62.4	62.4	62.5	62.5	62.6	62.6	62.7	62.8

Whole per cents are given in the left-hand vertical column; tenths, in the top horizontal line. To find required weight follow horizontal line for whole per cent of regain to proper tenth-of-per-cent column; thus, required weight at 9.3% regain is 61.3 grains

Fig. 1. Psychrometric scale for determining relative humidity or regain


WET BULB
50 55 60 65 70 75 80 85 90 95 100 105 110
DRY BULB
WOOL REGAIN PER CENT
RELATIVE HUMIDITY PER CENT
COTTON REGAIN PER CENT

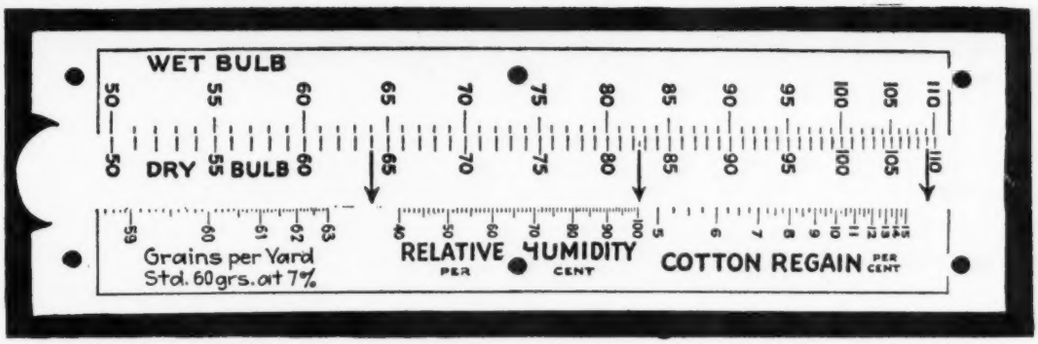

WET BULB
50 55 60 65 70 75 80 85 90 95 100 105 110
DRY BULB
50 55 60 65 70 75 80 85 90 95 100 105 110
59 60 61 62 63
Grains per Yard
Std. 60 grs. at 7%
RELATIVE HUMIDITY PER CENT
COTTON REGAIN PER CENT

Fig. 2 Psychrometric scale modified to give directly corrected weight of sliver at indicated regain

table made covering the desired range of grains per yard at varying per cents of moisture regain.

The psychrometric humidity scale made by American Moistening Co. and shown in Fig. 1 is in general use for determining relative humidity and per cent regain from wet- and dry-bulb readings. The dry-bulb divisions are printed on a movable slide. When the dry-bulb temperature reading is placed opposite the wet bulb reading on the left, the upper arrow on the slide points to per cent of cotton regain and the center arrow points to per cent of relative humidity on the right-hand scales. The lower arrow on the slide used to indicate wool regain may be easily adapted to indicate directly the corrected weight of sliver in grains at any indicated regain. Thus, in one operation, relative humidity, per cent regain, and corrected weight can be obtained without reference to tables or formulas.

A piece of blank white paper is pasted over the lower right-hand scale marked "Wool Regain" as shown in Fig. 2. The upper arrow on the slide is placed opposite 7 per cent for standard regain. The lower arrow points to the position of standard weight—in this case, 60 grains. This should be marked with a line about 3/16 in. long. Reference to Table I shows that 60.5 grains is the corrected weight for 7.9 per cent regain. Place the upper arrow opposite 7.9; the lower arrow now points to the position for the 60.5-grain line, which should be made slightly shorter than the 60-grain line. Other full-grain and half-grain positions can be found and marked in a similar manner. When these are marked to cover the desired range, each ½-grain division should be divided into five equal parts. This will give the 1/10-grain divisions. It will be noted that the divisions decrease in length as regain increases. This causes a negligible error in marking the 1/10-grain divisions.

If it is desired to dispense with the table, the required positions for the grain and ½-grain divisions can be found directly by using the constant given in the formula. For example,

$60.5 \div 0.5608 = 107.9$;
$107.9 - 100 = 7.9$ for 60.5 grains
$61.0 \div 0.5608 = 108.8$;
$108.8 - 100 = 8.8$ for 61.0 grains
$59.5 \div 0.5608 = 106.1$;
$106.1 - 100 = 6.1$ for 59.5 grains

When one scale is made, duplicates can be made by placing blank paper of suitable size over the original and tracing the divisions. Place the upper arrow on the slide to 7 per cent standard regain. Paste marked strip on scale with standard weight in grains opposite lower arrow.

This constant used as a divisor is easily obtained from the formula as previously shown for any desired standard weight. Use of this scale for rapidly determining corrected drawing weights will amply repay for the slight labor required for its calibrating and marking. It takes the guesswork out of drawing size, greatly reduces the need of gear changes, prevents large fluctuations due to humidity changes, and aids in better control of yarn numbers and cloth weights.

The same method can be used in making a scale for correcting picker-lap weights. It is necessary only to take the standard weight of lap in pounds at standard regain. Use a constant as obtained by the formula given above and divide the scale into ¼-lb. divisions. This scale can be used to check the lap-weight regain indicator, or it can be used to replace indicator by chalking up weights found.

These correction scales have been successfully used with the sling psychrometer, psychrostat, and stationary wet- and dry-bulb hygrometers.

A variable lag will be noted between humidity reading corrections and actual weights when humidity changes are great and rapid. Due allowance should be made for these rapid changes to permit cotton to adjust itself to prevailing regain. These extremely rapid changes are comparatively rare occurrences. It is good practice, when they do occur, and corrected standard weights vary greatly from actual weights, to postpone gear changes for a reasonable time. This delay permits adjustment, and a reweigh will usually show that a gear change is not required.

In Fig. 3 is illustrated a form suitable for recording drawing weights, humidity readings, regain corrections, gear changes, and weather conditions. It will be noted that in the three groups of typical readings shown, the actual weights were heavy or light and called for a gear change. However, the corrected standard weights show that the off-weight was due to loss or gain of moisture and that a gear change should not be made. The subsequent readings in each group show a recovery to standard weight.

DRAWING-SILVER WEIGHTS Date:_____

Time	Section	Dry Bulb	Wet Bulb	Relative Humidity	% Regain	Std. Weight	Corrected Std. Weight	Actual Weight	Draft Crown Gears on		Changed to		Weather
7 A.M.	1	72	64.5	67	8.9	60	61.1	61.5	39	100	—	—	Cloudy
11 A.M.	1	72	64	65	8.5	60	60.9	61.4	39	100	—	—	Cloudy
4 P.M.	1	72	62	57	7.2	60	60.1	60.4	39	100	—	—	Clear
11 A.M.	2	71.5	66	75	10.3	60	61.9	61.3	39	100	—	—	Rain
2 P.M.	2	76	67	63	8.2	60	60.7	60.9	39	100	—	—	Cloudy
4 P.M.	2	74	65	62	8.0	60	60.6	60.7	39	100	—	—	Cloudy
8 P.M.	2	72	62	57	7.2	60	60.1	60.2	39	100	—	—	Clear
7 A.M.	1	74	61	47	6.2	60	59.6	59.2	39	100	—	—	Clear
2 P.M.	1	73.5	63	56	7.2	60	60.1	60.3	39	100	—	—	Clear

Fig. 3. Form for recording drawing weights, humidity readings, regain corrections, gear changes, and weather conditions

Printing Symposium

Mill practice and merchandising considered at annual meeting of Textile Division A.S.M.E.

IMPROVEMENTS in printing machines, developments in printing colors and gums, a plea for further application of engineering principles to the printing process, and merchandising requirements of printed textiles were discussed at the annual meeting of the Textile Division, American Society of Mechanical Engineers, held Dec. 8, in New York. In addition, George A. Lowry, outlined briefly the contents of his paper "Hemp and Flax from the Seed to the Loom," which was presented the previous day at the session on drying. A. W. Benoit, chairman of the division presided. Officers of the division elected for the ensuing year include: Capt. H. D. Leonard, chairman; and John J. McElroy, secretary.

Machinery Developments

Wallace Taylor, of Textile Finishing Machinery Co., the first speaker, described the equipment used in printing, stressing recent improvements in design and construction. According to Mr. Taylor, mandrels on which the engraved rolls are mounted are now made with bearings of much heavier design, and the frame of the printing machine has been modified, particularly in the "nip" section.

Anti-friction bearings have been applied wherever practical, particularly to such attachments as carrier rolls, blanket rolls, etc. The oscillating motion for doctor blades has been improved to eliminate all vibration and to obtain a smoother action. Anti-friction bearings have been applied thus far to the main printing cylinder only on a new, very heavy, 14-color machine. Application of anti-friction bearings to the mandrel, and also to the smaller-sized printing machines, is expected whenever the market for printing machines becomes active.

Use of outboard self-aligning ball bearings has brought about a considerable improvement in ager design. Individual motor drives mounted on the side walls of the ager also make a decidedly improved piece of equipment. In addition, refinements have been made in construction of the ager itself through the use of machined cast-iron joints, fit of steam chest for the roof, etc. The so-called vestibule type entering throat or air seal, with its heated rolls, ports for ventilation, etc., gives the printer a much cleaner and more easily controlled ageing unit.

Soaping units with from six to ten compartments for high-speed operation are now built with stainless steel tanks whenever feasible. All nip rolls and carrier rolls which are not immersed in soaping liquors are fitted with ball bearings. The most modern soaping unit is driven by six to eight individual motors, one for each set of nip rolls, over a speed range of from 12½ to 125 yd. per min. Tension lengthwise is automatically controlled by ball-bearing dancer-roll compensators.

Within the last five years a great many dryers have been constructed having all-welded stainless steel cylinders fitted with individual syphons, self-aligning ball- and roller-bearing housings for the cylinder journals, special packless joints for the steam inlet and condensate outlet connections, and individual traps for each cylinder.

Stating that chemistry has overshadowed engineering in the print works, J. F. Halloran, vice-president Eureka Printing Co., made a plea for the further application of engineering principles in the design of buildings and in the layout and operation of printing, steaming, soaping, drying, and finishing machinery. In the discussion of Mr. Halloran's paper, the lack of modern materials-handling equipment in the print shop was pointed out.

A paper prepared by I. F. Chambers, of E. I. du Pont de Nemours & Co., and read by R. A. Shimp, listed the various classes of dyes used in textile printing, discussed the general fastness properties of each class, described the methods employed in producing direct and discharge styles of prints, and considered the factors influencing choice of printing gums.

Merchandising Printed Textiles

Determination of consumer style requirements in printed textiles months in advance of the opening of a season constitutes a major and unavoidable part of the task of forecasting fashion, according to S. J. Kennedy, of Pacific Mills. There are fundamentally fifteen divisions of the printed cotton, rayon and silk cloth market. The accompanying table shows the actual amount of each type of goods which the industry produces annually.

Annual production of printed textiles of various types.

Material	*Production*
Women's wear markets:	*Lin. yd.*
Percales	450,000,000
Sheer wash goods	140,000,000
Heavier wash goods	80,000,000
Miscel. wash goods	75,000,000
Rayon, silk dress goods	170,000,000
Handkerchiefs	14,000,000
	929,000,000
Men's wear markets:	
Shirting percales	128,000,000
Broadcloths	70,000,000
Summer suitings and slackings	40,000,000
Linings	5,000,000
Necktie fabrics (silk and rayon)	1,000,000
	244,000,000
Household fabric markets:	
Cretonnes	60,000,000
Sateens	4,000,000
Marquisettes	16,000,000
Tickings	35,000,000
	115,000,000
Total	1,288,000,000

Prints account for about 27% of all finished cotton goods and 19% of silk and rayon woven fabrics. About three-quarters of the total yardage of printed textiles is sold to cutters-up, which means that they reach the retail counter as made-up articles with a fairly high unit price.

The merchandising problem is one of continually viewing the printing and finishing processes in terms of markets and their requirements, which in turn represent the demands of the consumers, or of the retailers, garment manufacturers, and converters acting as interpreters or forecasters of this consumer demand. Thus merchandising, which lies in between the job of manufacturing and that of selling must eternally think and plan for the consumer on the one hand, while at the same time, see to it that the manufacturing end of the business is kept busy, if not happy.

"Going on 91"

Capt. Ellison A. Smyth still puts in full day's work

By WILLIAM G. ASHMORE
Southern Editor, TEXTILE WORLD

A FEW WEEKS AGO I dropped in to see Capt. Ellison A. Smyth, president of Balfour Mills, Hendersonville, N. C. As usual, this remarkable gentleman was at his desk and quite chipper. Last October he celebrated his 90th birthday, which makes him the oldest man in the textile industry, if not in any U. S. industry. Yet he is far younger today in physical appearance and in his thinking than many an executive who hasn't yet seen 60.

Capt. Ellison A. Smyth on the veranda of "Connemara" with his two collies, "Mike" and "Laddie"

To me, everything about Capt. Smyth is rather amazing. In the first place, one would be rather inclined to think that any man of 90 who goes to his office every day is simply indulging a whim. But not the captain. He not only goes to his office regularly, but he works from 9 a.m. until 2 p.m. After lunch, he turns farmer and checks up on the operation of his 400-acre farm. Between times he helps manage the Traffic Department of the American Cotton Manufacturers Association, which he organized in 1890 and which he still serves as chairman.

Successful Business Career

Captain Smyth has had a phenomenally successful business career and could have been enjoying well-earned retirement for the last half century had he so chosen. It is true that he sold out most of his textile holdings and went into semi-retirement about 1925, yet within a year he had built Balfour Mills and was soon active again. The answer is probably tied up in his philosophy that "to be happy a man has to work and save whether he be rich or poor."

He believes that sound employee relations are becoming more important every day in mill operation. "In the early days of our industry," he said, "a form of paternalism was necessary, as our employees were largely illiterate and helpless. Today, such paternalism has no place in industry. Put all the money possible in the employee's pay envelope and then let him shift for himself."

"Company stores encourage improvidence," he declared. "Bread and meat bought on credit are soon forgotten. I have never operated a company store and never expect to do so, although I suppose there might be justification in some instances as a matter of convenience."

Discussing economic trends, Captain Smyth denounced the third shift as "the greatest evil facing the industry today." He emphatically declared that "there has never been any excuse for third-shift operation and probably never will be. It is demoralizing and economically unsound. I, for one, have never operated three shifts and do not intend to begin now." He also denounced legislative uncertainty and Government extravagance as adverse factors.

Captain Smyth was born in 1847 at Charleston, S. C., and at 16 years of age entered the Confederate army. He fought through the last eight months of the war, and lived in Charleston during Reconstruction. Until he was 30 years old, Captain Smyth was active in the wholesale hardware business in Charleston. But he saw the economic possibilities of the Piedmont section of the State and sold out his Charleston interests. His first manufacturing venture was Pelzer Mfg. Co. which he organized in 1881. The mill prospered, and in 1895, No. 4 plant was added—the first fully electrified mill in the United States. Pelzer was sold to Lockwood-Greene in 1923.

From 1890 to 1925 Captain Smyth was extremely active in the textile industry and contributed much toward building up the Piedmont section. He constructed three dams on the Saluda River, organized Belton Mills, reorganized and operated at various times Grendel and Ninety-Six mills, near Greenwood, N. C., and Toxaway and Riverside mills, at Anderson, S. C. In addition, he was interested in the organization of several banks and power companies, and in reorganizing Anderson Fertilizer Co. Although he sold out his South Carolina holdings in 1925, he was actively in charge of several of the properties for some time after that, and today is on the board of directors of many of these plants. He is an ex-president of A.C.M.A. and served the Cotton Manufacturers Association of S. C. as president for 14 years.

When to Buy and When to Sell

Captain Smyth said that he has no basic business philosophy to which he can accredit his success beyond knowing "when to buy and when to sell." He is a voracious reader and has over 4,000 volumes in his library. Biography is his favorite type of literature. He enjoys shooting, fishing, and boating, much of which he had to give up when he moved inland. Some times he misses the coast, especially fresh oysters, but the craggy peaks of the Blue Ridge mountains offers compensation. Horses, dogs, turkeys, and other live stock are raised on his farm—on which he candidly admits he has never made any money.

Upon leaving Captain Smyth, I felt that I had traveled back through time into the most romantic period in the development of our country, and that I had traveled through it with an ageless man who has learned the secret of the art of living.

Throwsters' Tints

A silk and rayon weaver proposes a standard method for identifying S and Z twists

By W. F. PARRY

Lack of a uniform practice in the use of throwsters' tints has resulted in many unnecessary hardships in silk and rayon weaving mills. We indorse in principle the proposal made by Mr. Parry in the accompanying article, and suggest further that the Throwsters' Research Institute—in cooperation with the National Federation of Textiles and the National Rayon Weavers Association — is the logical organization to establish a standard method for identifying S and Z twists and basic yarn sizes.—Editor.

SILK AND RAYON weaving mills have had numerous troubles and losses caused by indiscriminate tinting of different lots of yarn. At some time or another every manager of a weaving mill has written to his throwsters asking for better cooperation in this matter. Always the result is a courteous, but negative reply—a reply to the effect that certain colors must be reserved for certain customers, and that the throwster is always striving his best to diversify colors. The writer, personally, has heard the same replies for fifteen years. Now and again we, the weavers, vow that we are going to have a showdown on this question of tints; but, after the mix-up which is troubling us at that particular time is straightened out, we postpone action for a few more months. One thing which we have failed to do is to offer the throwsters a constructive suggestion as to how they can cooperate with us in this matter. That is what this writer proposes to do now.

Present Difficulties

After these many years that S- and Z-twist yarns have been used, we still receive lots containing yellow with light green; red with purple; blue with gray. We still get whole pieces of cloth ruined by misplaced ends, where two ends of the same twist lie side by side, when the construction calls for alternate S and Z ends. We find weavers running both shuttles with the same twist in a 2x2 crepe.

We realize that the throwster has plenty of troubles of his own with this color problem. He has to keep separate the materials of many customers through many departments; and he is confined to a certain limited number of colors. But when he has finished one lot, that is the end of it for him. Not so with the cloth manufacturer, whose orders are often insufficient to use up the whole lot, or who finds that he has a surplus of one twist at the end of the lot. These surpluses often cause trouble when he tries to use them later—possibly a yellow Z twist with an orange S twist, or some other close combination.

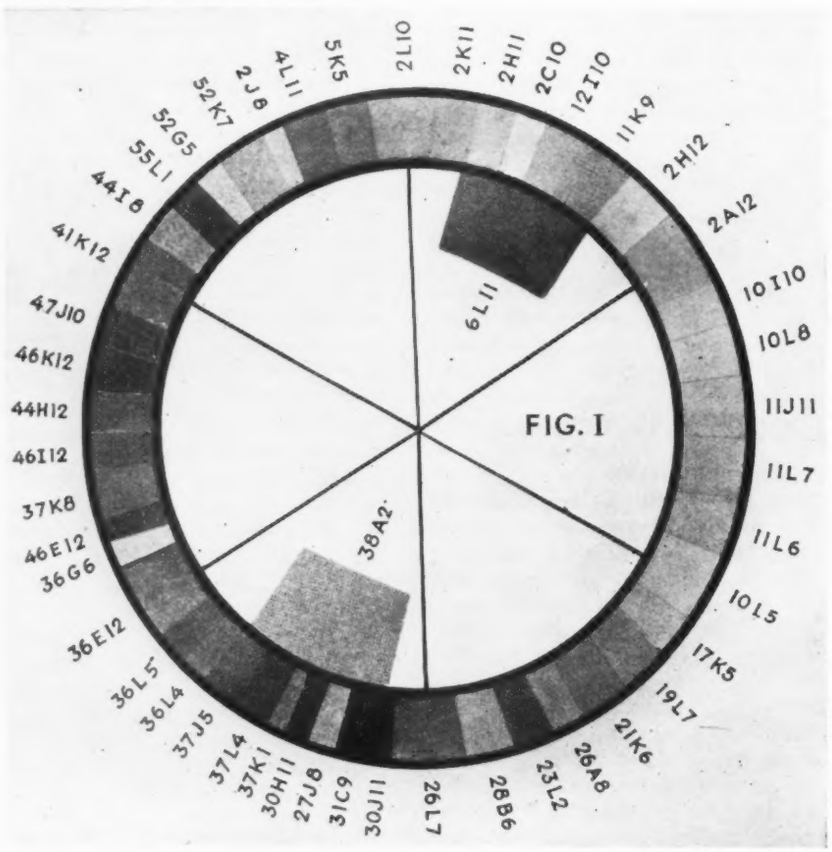
The cloth manufacturer is the buyer, and he should be able to get what he wants. It is the duty of the throwster to see that he does not give his customers conflicting colors, at least within some reasonable length of time; say, perhaps, during the same year.

The throwster may reasonably ask: "If a mill runs as many as ten, twenty, or more lots at a time, how can I be expected to supply different colors for all of them—especially when that mill has its throwing done by half a dozen concerns?"

An Industry Problem

The answer is that it is not the individual problem of one throwster, but that of the throwing industry as a whole. The throwsters should establish rules governing the use of colors for identifying basic yarn sizes and the separate twists. Some throwsters have rules of their own, but these often conflict with practices of other throwsters. Certain throwsters use the darker shades for Z twist, and the lighter shades for S twist. But this does not always work out satis-

Fig. 1. Color chart so arranged that opposite colors are directly across the circle from one another



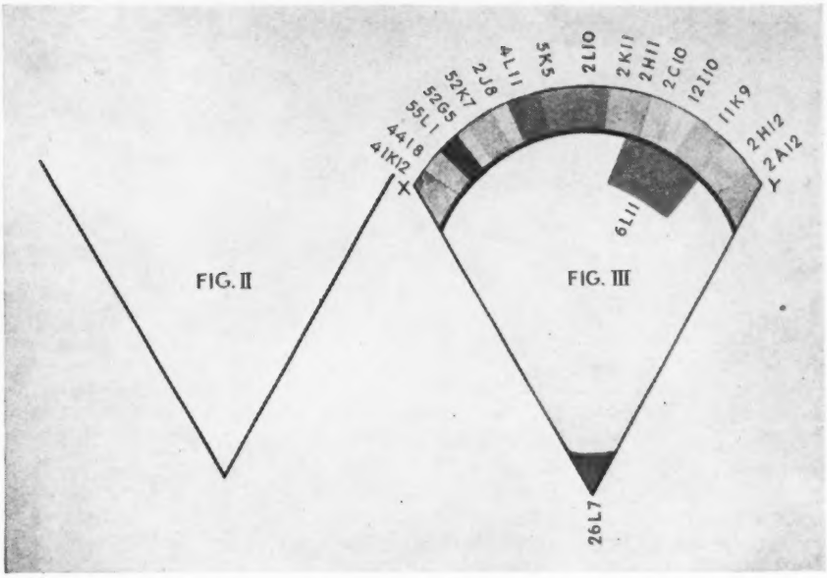


Fig. 2. Angle drawn on transparent material for use with color chart shown in Fig. 1

Fig. 3. With point of angle placed on any color, all colors within range of its arms are opposite

factorily for the weaver. Sometimes a green will be the S twist against a purple, while this same green will be a Z twist against a yellow.

It is important that different lots of material be separated by different colors. It is much more important that opposite twists have a strong contrast in color. Just a slight difference of shade may be easily discernible on the bobbin; but the difference becomes almost non-existent when one looks at single warp threads, as the weaver at the loom must do. Very often we get warp stock tinted with yellow and green; for long stretches the pale green will be almost yellow, and the weaver who has to tie in broken ends gets the headaches.

Mere difference of color is not the only consideration. Contrast of color is not important to the throwster, but it can mean a great deal to the weaver. Green should not be used with blue or yellow, because it contains both those colors; purple should not be used with red or blue; nor orange with red or yellow. The United States Testing Co. suggests that all colors containing red in their make-up be reserved for S twist. This is appropriate, because there are probably as many distinct colors containing red as all the rest put together.

Opposite Colors

Opposite or contrasting colors should be used together. In the color chart illustrated in Fig. 1 opposite colors are directly across the circle from one another; thus green is opposite red; violet-purple is opposite yellow, etc. However, the throwster is not bound quite so closely as this; with green as one of his colors, he can use for the other any variation of color from orange to purple; that is, he can use orange, peach, salmon, red, scarlet, maroon, lilac, purple—all containing some red in their make-up. To simplify this by illustration again: Take the angle in Fig. 2, place the point on one of the desired colors, and all colors within the range of its arms are suitable opposites. Thus, in Fig. 3 the point is on green, which can be safely used with any of the colors between X and Y.

Although they may not be in their strictly chromatic positions, brown and gray in the chart (Fig. 1) are placed at those positions where the writer believes they are most satisfactory from the viewpoint of the weaver; that is, directly opposite each other, and opposite those colors with which they most contrast. The natural white of the raw material can also be used for one of the colors, but it should be standardized for one certain twist.

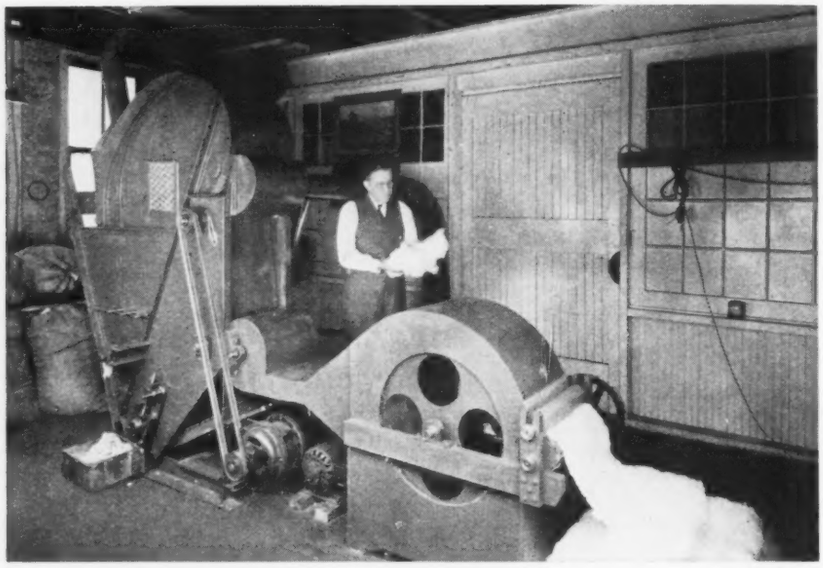
The chart given in Fig. 4 shows what colors can and cannot be used safely for identifying S and Z twists which are to be used together. Only the main colors are given, but other variations of these colors can easily be visualized by the reader. This chart shows that the throwster has at least sixteen major combinations with which to work. The numerous variations of each color will give him many times that number of combinations. For instance, the chart (Fig. 4) shows that purple can be used with yellow, green, orange, and gray; but it can be used also with such variations of these colors as gold, amber, lemon, pea green, leaf green, endive, mignonette, apricot, battleship gray, and silver gray.

The major points which the writer has emphasized are: (1) The throwing industry should standardize on certain colors for S twist, and on the other colors for Z twist. (2) Opposite colors should be used for opposite twists. (3) The throwsters should also establish rules governing the use of colors for identifying basic yarn sizes. The charts are offered merely as guides to the throwsters in selecting colors which can be used safely for identifying S and Z twists which are to be used together. Will the throwsters cooperate with the weavers and work out a standard method for identifying S and Z twists and the basic yarn sizes?

Colors used by Mr. Parry in making the chart have been identified by the system employed by Maerz and Paul in the "Dictionary of Color." By reference to that book, readers desiring to do so can construct a similar chart. Upon request, TEXTILE WORLD will furnish transparencies in approximately natural colors at cost for materials and photography.

FIG. 4 — Colors that can and cannot be used safely for identifying S and Z twists which are to be used together.

	YELLOW	BLUE	RED	GREEN	ORANGE	PURPLE	BROWN	GRAY
YELLOW								
BLUE	Yes							
RED	Yes	Yes						
GREEN	No	No	Yes					
ORANGE	No	Yes	No	Yes				
PURPLE	Yes	No	No	Yes	Yes			
BROWN	No	Yes	No	Yes	No	No		
GRAY	Yes	No	Yes	No	Yes	Yes	Yes	



Working model of the Watson Centrifugal Gin, invented by Frank Watson, 62 year old cotton man of Jonesboro, Ark. This model is in operation at Bridgeport, Conn.

The Missing Link?

Centrifugal gin may fill gap between mechanical picker and spinning mill

By MILDRED G. BARNWELL

Executive Assistant, Southern Combed Yarn Spinners Association

A SOUND ginning principle based on an interesting theory but without practical experimentation to back up its potentialities is the news behind the news of the Watson centrifugal gin, first deviation from the Eli Whitney method.

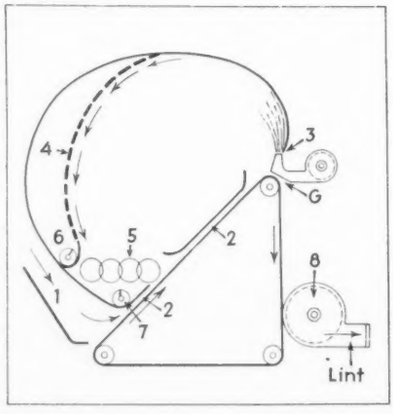
Despite wide publicity given to the possibilities to be created by the Watson gin, as things stand now there actually is only a very good working model, from which some unusually clean samples of ginned cotton have been obtained. The basic principle of the gin is that centrifugal force and suction are employed to separate the lint from seeds and trash rather than the saw teeth and ribs used in the present type gin. In comparing samples taken from the same lot of seed cotton and ginned on the present-day gin and the centrifugal gin one is struck with the marvelously clean appearance of the latter. This is due to the force with which the cotton is thrown, in the Watson process, against a mesh screen which does work to put the Gold Dust twins to shame.

Although momentous possibilities loom as a result of the cleaning ability of the Watson gin, any figures released today in connection with such are not important. No exhaustive tests have been made as to the practicality of the machine: its capacity and turn-out are not known; cotton qualities, staple length, spinnability have not been ascertained in any degree; likewise seed injury has yet to be judged.

One fact stands out: unless cotton ginned from this machine is acceptable for grade compared with government standards, the gin has no commercial value. That it will be accepted has yet to be proved.

May Prove Missing Link

Ginning experts freely admit that if the machine comes up to expectations it will prove to be the missing link between the mechanical cotton picker and the spinning mill. They also state that until exhaustive experiments have been made with the cooperation of the government ginning laboratories they can not consider the gin as a revolutionary factor in the cotton industry. It is anticipated that at least several months of concentrated work on the part of the proper authorities will have to be given over to testing Frank Watson's invention before any marketing developments mature.



Description of diagram of Watson Centrifugal Gin— (1) Seed cotton sucked in and travels along belt (2) (which is constructed of card belting of type used in cotton mills) making 3,000 to 4,000 revolutions per minute, to point (3) where it is struck with air blast which blows cotton up and against mesh screen (4). Four rollers set at distance apart allow seed to drop through only when delinted from this seed grid (5) seed drop into outlet and out of the machine. Trash blown out of the cotton is eliminated through thrash auger (6). Cotton continues to travel round and round inside the gin on revolving belt and by force of air jet, until the clean lint is carried out through ginning zone (g), stuck to card belt and removed from belt by gin brush (8) and carried into condenser.

Fiber Identification . . .

Drive for informative merchandising far broader than one fiber, study shows

WHATEVER the opening year may hold for textiles one thing is clear: Fiber identification is destined to play an increasingly important part in shaping the industry's merchandising policy. With the trade conforming more and more each week to the rayon rules promulgated by the Federal Trade Commission, and with rules for the other fibers now nearing completion, this issue of identification stands definitely in the foreground of textile sales problems for 1938.

To properly evaluate the significance of the movement it should be kept in mind that this agitation is far from being the overnight matter that some are disposed to consider it. Actually it goes back nearly a generation. Throughout the 20's and the depression years home economics classes in high schools and colleges, women's clubs, farm organizations, etc., awakened in millions of consumers a keen sense of criticism regarding textile content.

Consumer dissatisfaction with the existing situation was accentuated by the depression; subsequently support rallied behind the pioneer legislative efforts of Miss Julia Jaffray, chairman of the committee of economic adjustment, New York City Federation of Women's Clubs. Led by Miss Jaffray, the right-wing consumer movement, interested in better merchandise information and higher standards of advertising, gained strength rapidly. During 1935 and early 1936, pressure was brought to enact laws making identification compulsory. Recognizing that voluntary action, taken in time, could avert the threat of drastic legislation certain more foresighted textile leaders urged the trade to favor self-imposed regulation. The agitation by consumer bodies began to bring results when, in November, 1936, the New York City Federation of Women's Clubs adopted a strong resolution asking the Federal Trade Commission to act on textile identification.

Developments Came Rapidly

The New York City Federation's action was followed by a rapid series of developments among both textile manufacturers and retailers. The historic consumer relations session of the National Retail Dry Goods Association in January, 1937, adopted a resolution asking that the organization take a definite stand, and in June, 1937, the association made public in its formal platform a section on consumer relations. This comprehensive document went far beyond the immediate issue and really became a statement of policy to guide the organization for years to come.

Up to this period, the identification sponsors had focussed mainly on the silk-rayon issue as being the most acute, and the fight thus was a matter of immediate concern to rayon yarn producers. After preliminary conferences with the Federal Trade Commission, this branch of the industry drafted a code of identification rules which was presented to the Commission at a hearing in New York last October. A few days later, the Commission announced that those suggested rules had been rejected, and shortly thereafter the Commission promulgated its own draft of rules, effective as of Oct. 26. Unlike the earlier rules which covered only rayon yarn producers, every section of the industry from primary producer to retailer was made responsible for identification in the Commission's regulations. These rules provided, among other things, that textiles having rayon content shall be so described, and that use of the term "rayon" in all descriptive material was mandatory irrespective of brand name. Retailers and yarn producers alike refused to officially accept the rules, though both strongly approved the basic aims.

Manufacturers of branded rayon yarns who had hitherto refused to be included in the "rayon family," revised their policy in compliance with the new regulations, and added the term "rayon" to their brand names in all advertising literature. One important point which has been raised by these firms is that the bunching together of acetate and viscose rayons under the loose head "rayon" is inadequate, because the two types need different chemicals for cleaning. Producers of both types now are stressing use of term "acetate rayon" in advertising, to clarify this point.

Basic differences between acetate and viscose rayon as regards uses and appearance as well as cleaning, should be pointed out in all identification, it is emphasized, otherwise widespread consumer dissatisfaction would very probably result.

Welcome New Rules

To the majority of rayon yarn producing firms the new rules have been welcome, rather than otherwise. The

Checking advertising at Macy's (N. Y.) to conform to F. T. C. rules

industry as a whole had long struggled to get retail and consumer recognition of the generic term, and had spent large sums to that end. Immediately upon promulgation of the rules, retailers all over the nation scrupulously inserted the word "rayon" in all advertising pertaining to synthetic fiber merchandise. The result was startling; holiday advertising, totalling millions of dollars, highlighted the word rayon in larger type than ever before, and used it in describing dresses and coats retailing as high as $200. The result was an important gain in prestige for the man-made fiber.

Aiming to familiarize the public with the purposes behind these regulations, as well as with the problems they create, all the developments were widely publicized both by print and radio. The consumer viewpoint was expressed by Miss Jaffray and others in a coast-to-coast broadcast over the NBC network; this was answered on behalf of the retail trade by H. W. Brightman, vice-president of L. Bamberger & Co., and chairman of the merchandising division of the National Retail Dry Goods Association, who was interviewed over Mutual networks by John Black, assistant editor of TEXTILE WORLD.

The biggest problem still unsolved in conforming to the new rayon rules is that of labelling. For the manufacturers of knit goods, particularly underwear and outerwear, the label matter is a particularly hard nut to crack; however, conferences are in progress between these manufacturers and distributors' representatives.

To the retailer the label job is highly involved and one which it will take months, if not years, to standardize. This is manifest when it is kept in mind that textiles represent 70% of store merchandise, and 75 to 80% of these textiles have rayon content. Thus the labelling job comprehends thousands of items, extending far beyond textiles as such and includes such abstract lines as shoe linings, furniture, industrials, etc.

Because of this, trade leaders point out, the Federal Trade Commission will have to follow the spirit rather than the letter of the rules, and allow broad tolerance to the trade in its efforts at compliance. The need for tolerance is vital; a lack of it could conceivably destroy the whole efficacy of the rules. One rayon producer made a comment which well illustrates the complexity of the labelling job; he said: "You can't label the rayon lining of a jewel box!"

Philadelphia Hosiery Associations Merge

A FURTHER STEP toward centralized action by the hosiery industry in its labor relations was taken last month, with the news that the two Philadelpia associations of hosiery manufacturers representing respectively the closed and the open shop mills, had voted to consolidate. Under the merger arrangement, the Full-Fashioned Hosiery Association, Inc., open shop body, went out of existence, its members becoming part of the Full-Fashioned Hosiery Manufacturers, Inc. of America, which hitherto had represented only closed shop manufacturers.

Trade opinion heralded the merger as a constructive move which would make for more standard labor conditions, thus reacting to the benefit of the hosiery industry as a whole. Both associations involved have been active for some years on behalf of their respective branches. The Full-Fashioned Hosiery Association, composed of the open shop mills, was formed about 1933; the Full-Fashioned Hosiery Manufacturers of America, closed shop organization, came into existence during the mid 20s, but became formally active in 1928 when the first National Agreement went into effect. The difficulties involved in combining the two groups with so widely divergent views regarding labor relations, were surmounted by means of a compromise.

Broadly speaking the new body includes three classes of manufacturers: (a) Those who are solidly closed shop and operate through the National Agreement; (b) those who have limited agreements individually with the branches of the American Federation of Hosiery Workers; and (c) those having no union contracts whatever. To bring these apparently irreconcilable groups together a new policy was developed for the combined organization. This policy provides that all hosiery manufacturers can be members of the association, irrespective of whether their mills are open shop, closed shop, or limited agreement; the only requisite of membership—and this is a strict rule—is that all manufacturer-members must conform to union hours, wages, and other standard mill conditions. Some firms coming into the combined association from the disbanded open shop body are still operating on contracts permitting lower wages and longer hours than standard, and these firms are permitted to complete such contracts; when the contracts expire wages, hours, etc., must conform to the uniform basic standard.

The consolidation excited widespread attention in the industry, and stimulated speculation as to how far-reaching this trend toward centralizing the union relationship task might prove. The presidents of the two associations—George Lang, president, Co-Ed Silk Hosiery Mills, Inc., for the closed shop group, William Meyer, president, Apex Hosiery Co., for the open shop body—were credited with deft diplomacy in accomplishing the merger. It is understood that the open shop association was motivated to consolidate largely because many of its members had negotiations pending with the union which they would have had to carry through individually if the old status were continued. Under the new set-up they will be in a stronger position, through their affiliation with an organization recognized and accepted by the union.

Negotiations for the consolidation extended over a six weeks period; separate meetings were held by the two memberships, then by-laws were drafted and these were officially approved at a combined meeting of the two associations. It was announced that the staffs of both organizations would be retained, Chas. Lehmuth, who was executive secretary of the disbanded open shop body, and Joseph Haines, Jr., executive secretary of the closed shop organization which retains its name, Full-Fashioned Hosiery Manufacturers of America, Inc. The combined organization has headquarters at 3701 N. Broad St., Philadelphia.

The new set-up is expected to help toward developing a stronger National Agreement because in future this agreement will be binding upon a much larger group of manufacturers. By the same token, the provisions of the accord are expected to be somewhat modified to accommodate the sentiment of the open shop mills.

Formal announcement of the consolidation was made in Philadelphia last month through a statement issued jointly by Mr. Lehmuth, for the disbanding Full-Fashioned Hosiery Association, Inc., and Mr. Haines for the enlarged Full-Fashioned Hosiery Manufacturers of America.

Research and Testing

Pay their own way and return a profit on the investment

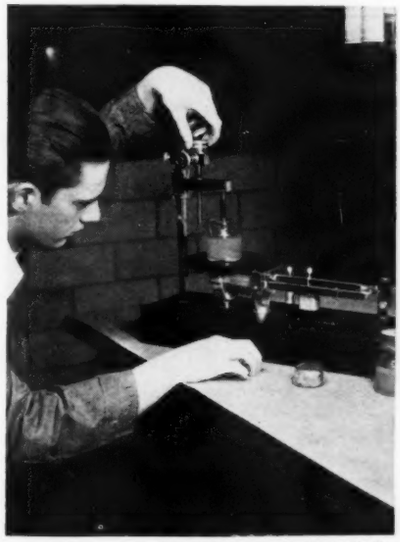
By IRVING J. SAXL
Consulting physicist and chemist

IN THIS fast-moving age of technological development, the fate of a company stands or falls with the degree of its development and application of better methods. Thus, research and its practical application to the reduction of cost and improvement of quality of the product are vital factors in running textile mills on a profitable basis. There are numerous avenues of approach for application of research. However, what is commonly regarded as research in textiles today concerns itself almost exclusively with the testing and improvement of raw materials, manufacturing processes, and finished products.

Getting Most Out of Fibers

Textile fibers—whether cotton, wool or staple rayon—are sold on a basis of poundage and quality. Even in synthetic yarns variations exist, and the mill must get such material as will make the most out of the pound. This factor can be evaluated by testing machines and processes, as can other factors, such as minimum breakage, maximum tensile strength of individual filament, spinnability of fiber, resiliency of yarn, optical properties (such as gloss and luster), and handle or feel.

In the purchase of rayon yarn of 100-denier, 40-filament, the denierage may vary, say, from 96.6 to 104.2. If we have 104.2-denier yarn, it will give 42,840 yd. per pound, while 96.6-denier will give 46,200 yd., a maximum variation of 3,360 yd. for every pound of yarn purchased. Presence of thick places decreases yardage per pound; it is, therefore, in the interest of the manufacturer to buy a rayon yarn that will not show an excessive percentage of such thick places. An evenness tester permits the evaluation of such yardages and shows directly to the consumer whether he has received his money's worth in the yardage of the yarn or not. The textile manufacturer may get 100,000 yd. of cloth from one yarn, and 105,000 yd. of cloth from another yarn of more even characteristics. This difference of 5,000 yd. of cloth may make the difference between the red side and the black side of the ledger. By this one form of testing alone, a nationally known mill producing substantial amounts of rayon goods was able to increase its yardage 5%. This mill's output was 150,000 yd. per week. A saving of 7,500 yd. per week was then made possible. This, on a full-time yearly basis, is a saving of 390,000 yd. At 22½c. a yard, this totals $87,600 saving.



Courtesy E. F. Houghton & Co.

The Gelometer makes it possible to evaluate gelatines and other textile auxiliaries.

Evenness testing may be used not only for the purpose of testing synthetic yarns, but it can be applied to the development of proper yarns, whether of wool, cotton, synthetic fiber, or other materials.

Next to the optical appearance of a cloth, its handle or feel is of greatest commercial importance. Not only cloth construction, but, in addition, use of different sizes and softeners and of different calenders and other finishing machinery will influence the final handle of a fabric. From draping qualities to the influence of certain machinery, and from processes for increasing crush-resistance to the application of certain sizes and softeners, the measurement of stiffness is of predominant importance. Measurement of the resistance of cloth to bending, which has been found to be directly proportionate to its stiffness, may be accurately made on a suitable testing machine.

Research has paid for itself in the proper selection of various finishing formulas. Having established a standard of consumer satisfaction, the mill finds it possible to set out to produce that standard of finish with less expensive materials. One nationally known firm was, by this form of testing, enabled to reduce the amount of its finishing oils by 35%. As this mill used 40,000 lb. of finishing oils which were costing 11½c. per pound, the saving was a net of $1,610 per month, or $19,320 annually. It is self-evident that this research program paid for itself in a short time.

Checking Sizes and Finishes

Research has taught mill men how to make most advantageous use of auxiliary materials, such as oil, gelatines, size, dyes, and finishing compounds. Research takes the place of the subjective sales presentation and introduces actual money value on the pound-by-pound basis. Take gelatine, for instance. The price of various gelatines gives practically no indication of their value for sizing and similar purposes. The six characteristics that are of real value in gelatine for textile purposes are gel factor, jelly strength, yield point, solubility, film strength, and adhesiveness. Gel factors determined for various gelatines proved conclusively in one case that a lower grade gelatine would not only do the work cheaper, but would produce a better finished grade of material. During the period from February to September, 1937, the manufacturer of textile chemicals involved has saved $65,000 in gelatine alone.

Research and testing offer specific facts and figures for use before an arbitration committee. A research finding gives clear facts, undeniable figures, and prevents many "framed" complaints. Research supplies methods and apparatus to trace deficiencies to their true sources.

Through the improvement of quality in textile materials and reduction of costs by the use of modern testing instruments, research has not only paid for itself, but it has made possible better profits in the textile industry—and we have just started.

Better Lubrication

Of circular hosiery machines will result in lower maintenance and power costs

By I. C. MOORE

IN THE MAINTENANCE of circular hosiery machines particular attention is paid to the accurate setting and adjustment of the many attachments, the grinding and polishing of cams, and the replacement of defective needles, sinkers, and jacks. In many cases, unfortunately, the important subject of correct lubrication does not receive this same careful consideration. Yet proper lubrication of these machines will reduce power consumption and wear, thus lowering operating and maintenance costs. The mill itself can effect many improvements in lubricating methods; other improvements call for changes in machine design. The following discussion deals largely with the more efficient lubrication of existing machines, but includes also some suggestions on refinements in equipment which would lead to still better lubricating practice.

While the circular hosiery machine has made wonderful strides in the last quarter of a century as far as effective knitting is concerned, the oldest and least efficient method of oiling is still employed—intermittent oiling with the oil can through the oil hole. Due to its construction, the knitting machine has some parts that cannot be lubricated any other way; these parts include needles, sinkers, and pinion and spiral gears. On the other hand, much time, lubricant, wear, and power could be saved by equipping certain of the bearings for pressure lubrication. This is true, for example, of the left main bearing and others which must be oiled every eight hours through an oil hole.

Pressure System

During the last few years several full-fashioned machines have been equipped for high-pressure lubrication. Many full-fashioned men are loud in their praise of this more modern method. They state that the machines can be turned over by hand much more easily than with the old system of oiling; also, with the high-pressure system, there is not nearly so much oil dripping on the floor. Not long ago a full-fashioned fixer remarked: "Just the other day we tore down a machine that had been running for several years with pressure lubrication. The bearings were just like new." Another man said that he oiled every two days until the high-pressure system was installed; now he lubricates every two weeks.

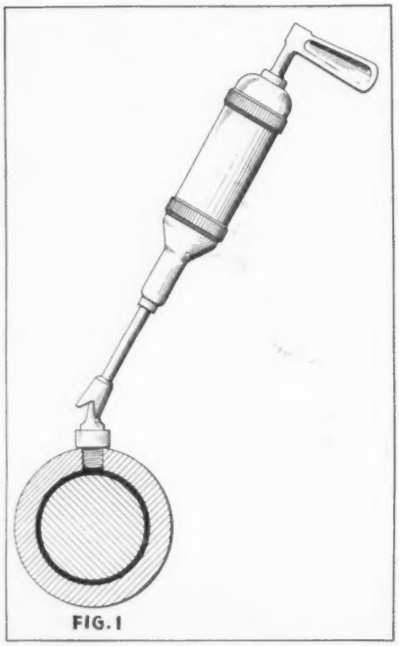


Fig. 1. Shaft and stud bearings on circular hosiery machines can be fitted for pressure lubrication

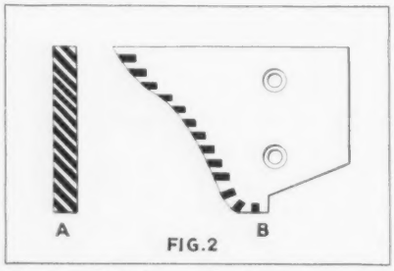


Fig. 2. Stitch cams with grooves cut across the face for holding graphite

It seems to many of us that pressure lubrication has not been applied to circular knitting machines so extensively as it could have been. With the pressure system—the lubricant being applied with a grease gun as shown in Fig. 1—the grease is more evenly distributed over the bearing surface and does not leak out to soak into the floor or on to goods in process. The grease remains in place, keeping the wearing surfaces apart; this is nearer the ideal condition for correct lubrication.

Shaft and stud bearings on circular hosiery machines are equipped with oil holes. Dirt and grit, which are always present to a greater or less extent in all knitting rooms, accumulate in these holes and find their way to the bearings, resulting in premature wear and unnecessary power consumption. Fitting these oil holes with a high-pressure-lubrication device is not difficult or too expensive. The fitting is equipped with a spring-and-ball valve, which allows the grease to pass through, but closes immediately when the pressure of the gun is released, thus preventing grit from getting into the bearing. Again, bearings which are not easily accessible with the oil can are reached more readily with the gun.

There are many soap-thickened lubricants on the market for use in this method of lubrication. Some are very good; others have poor lubricating properties—or too high viscosities, which cause power loss through "fluid friction." However, by using greases or non-drip oils made by reputable refiners especially for high-pressure lubrication, one will effect a saving in both power and maintenance costs.

Oilless Cams

Proper oiling of needle and sinker cams on knitting machines is difficult, if not impossible, with the present method. It is customary, when oiling the needle cams, to squirt a drop or two of oil on the face of these cams once a day. The sinker cams are oiled through a hole on the top of the cam ring; a couple of drops once in eight hours is considered sufficient. As every machinist knows, the ideal way to keep two sliding surfaces well lubricated is to maintain a uniform film of oil at all times to keep the rough surfaces of the metals (invisible to the naked eye) separated. Theoretically, enough oil is applied at each application to last for several hours. Actually, this is not the case; some of the surplus oil drains off to the bed-plate of the machine; the rest is gradually swept off as the needle and sinker butts pass over the face of the cams.

Since it is difficult to keep these

cams uniformily lubricated, they become worn and rough—especially the stitch cam—and must be reground and polished. However, the cam faces can be properly lubricated by impregnating them with graphite. This is accomplished by cutting a series of grooves across the face of the cams from one end to the other at a 45° angle, and imbedding graphite (hardened to a substantial degree) in these grooves. The drawing in Fig. 2 shows a stitch cam impregnated with graphite; *A* represents the face, and *B* the profile. As the graphite grooves are cut at an angle, the butts are always in contact with both the graphite and the metal; the former furnishes the lubrication, and the latter preserves the necessary strength of the cam.

Passed Experimental Stage

While this method of lubrication—commonly referred to as oilless bearings—is new as far as knitting cams are concerned, it has long since passed the experimental stage; indeed it was known and applied to machinery as far back as 30 years ago. Undoubtedly, if mill men would have some of these oilless stitch cams made and would try them on one machine, it would be only a question of time until they installed cams of this type on all of their other machines.

Lubricating the cylinder wall with its needles, and the sinkers, even by the most modern method, is far from ideal. While it is, no doubt, possible to construct cylinder walls and inner sinker rings embodying the graphite-groove system, they could not be applied to machines now in use without considerable expense. Therefore this improvement must be left to the machine builders.

Needles and Sinkers

Owing to the fact that the modern knitting-machine cylinder is almost surrounded by attachments for effecting novel designs in knitting, these parts are not so accessible as they were on the older machines. This makes a special device necessary for oiling the needles and sinkers. The long-nozzle spray-can, with which a light stainless oil is sprayed on these parts, is possibly the most satisfactory device developed to date.

The bulk of the lubricant should be applied near the needle butts, as this is where most of the friction occurs. Some attendants oil the latches every time they do the needles. This is not only unnecessary, but, on some makes of machines, may cause the latches to stick to the hooks, thereby causing drop stitches. A light spraying once a week sufficiently oils the latches.

It should be mentioned here that for best results as regards lubrication, the temperature of the knitting room should be kept around 80° F. When the machines are all standing idle, as at night or over week-ends, the temperature should be somewhat higher to allow for the heat generated by the machines when the latter are in operation.

A Look Ahead

It can safely be estimated that not more than 15% of the lubricating oil applied to knitting machines reaches the bearing; the rest accumulates on machine parts, soaks into stock, or finds its way to the floor. Anti-friction bearings—ball bearings for lighter machinery, and roller bearings for the heavier machines—are standard equipment on some types of textile machines today. It is not unlikely that the higher-speed bearings on future knitting machines will be so equipped. These bearings require a certain amount of lubricating oil, to be sure, but it is only a fraction of that required for plain bearings. Possibly the dial grooves, the needle-cylinder walls, and the inner sinker rings, as well as cams and other sliding parts, on the future machine will be impregnated with graphite, requiring no oil.

Circular hosiery machines offer fertile field for lubrication improvements

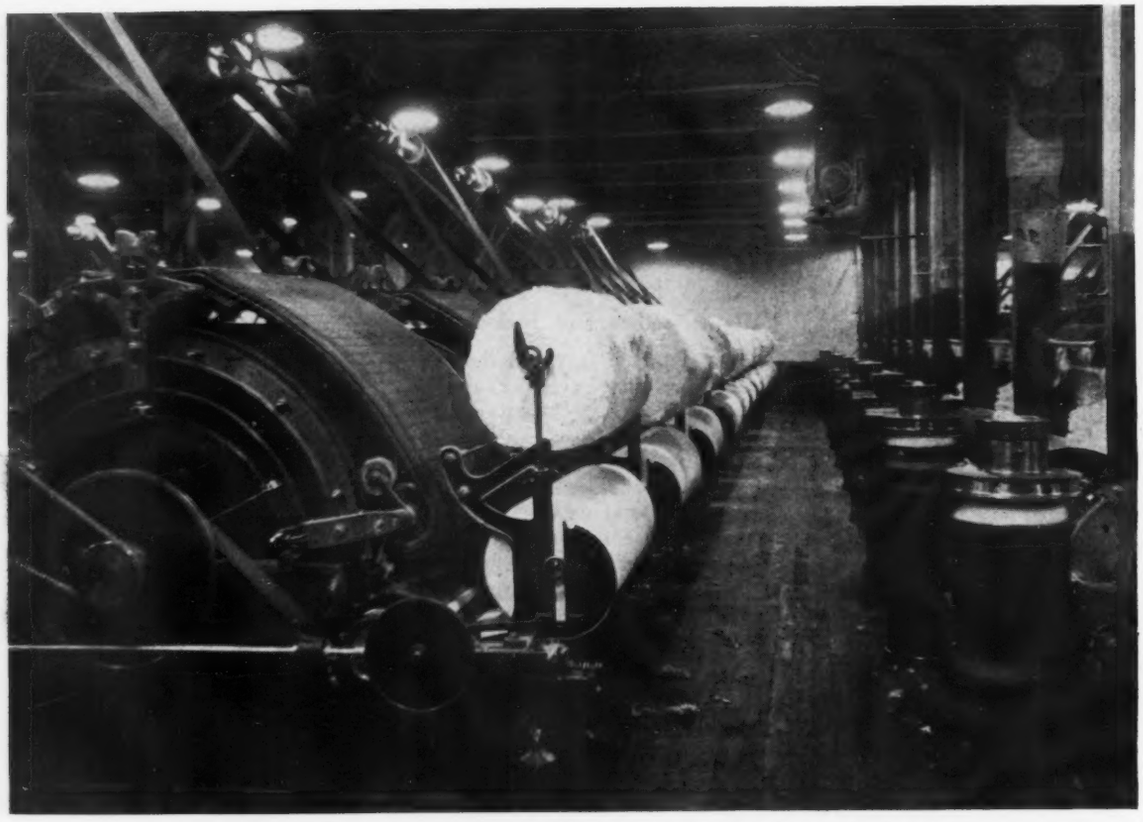


Fig. 1 Old cards have been rebuilt and new ones added to keep mill in balance

Yarn Mill Modernizes

Extensive Tolar, Hart, & Holt program places stress on uniformity of product

CONSIDERABLE progress has been made in carrying out changes in accordance with an extensive modernization program inaugurated at Tolar, Hart & Holt Mills, Inc., Fayetteville, N. C. Single yarns, 10s to 30s, are being manufactured, principally for the knitting trade. As uniformity of size and strength is particularly important in these products, the modernization plan decided upon by the management stresses improvements which will insure the production of yarn having this quality.

In the opener room five new blending feeders and two Buckley cleaners were added, giving an ideal complement of machinery for the first important process in cotton yarn manufacture. Ample floor space was provided for breaking down 50 bales, in order to secure a uniform mixture at all times. Single-process pickers have been installed in the picker room and every effort is being made to produce laps of uniform weight.

In order to keep the mill in balance, ten new cards were added to the original quota of 49, and all the old cards were reworked where necessary and put in first class condition. Long-draft roving has replaced the older frames.

Long-Draft Spinning

The next step involves removing the old spinning frames of 228 spindles each, and replacing them with new long-draft, large-package spinning. Eighteen new frames have already been installed and 30 more are to follow. These frames are 264 spindles each, 2½-in. rings, 3¾-in. gage. H. & B. American Machine Co.'s latest equipment has been used.

Eight old winders, 100 spindles each, have been replaced with No. 44 Universal Winders, 120 spindles each, of latest improved model. Four machines have been installed. These winders are equipped with two 5-hp. Diehl motors to each machine.

A modern conditioning chamber containing one complete unit of the Bahnson conditioning room equipment, with automatic heat and humidity control, has been provided to condition all yarn before shipment. Yarn is conditioned in packages just as it comes from the winding machines. It is then packed in cases, each cone being separately wrapped. The conditioning room is insulated with cork covered by an impervious gypsum board. The floor is waterproofed. Heat for this room and the equipment is supplied by a round Type R Kewanee boiler with automatic Iron Fireman stoker. Operation of the boiler is controlled automatically from the inside of the chamber.

Laboratory equipment is being installed and will be added to in the future to insure accurate scientific control of the various steps in the manufacture of the yarn, especially directed toward uniform size and strength.

In order to cooperate with the mill in its modernization work, the Carolina Light & Power Co. ran in a special 66,000-volt line to provide ample power with regulated voltage. Plans for all electrical work were prepared by Harold L. Ross, consulting engineer, Greensboro, N. C., and the program is being carried out under his supervision. No part of the old installation is being used, except a few manual circuit breakers and magnetic switches. With this exception, the entire installation is new from the power company's secondaries to the last motor and light outlet. When the installation is completed, both the power and light circuits will be without fuses, the protection of the several circuits being handled with circuit breakers of the correct rating. This arrangement will provide complete protection to the circuit wires at present, and will protect the circuits from overload in the future, such as might happen by the unauthorized substitution of larger fuses.

Electrical Equipment

General Electric Co. furnished the new dead-front power feeder switchboard, equipped with AF-1 circuit breakers for control of ten feeder circuits. This switchboard is equipped with ammeters, wattmeters, etc., to facilitate close check on the power consumed in the various departments of the mill. The board, with its switches, breakers, and meters, was completely fabricated and shipped assembled by General Electric Co. to reduce the installation cost.

General Electric Co. also furnished the 40-hp. four-frame-drive motors of the screenless open type for the group drives in the spinning room, each motor being a two-bearing motor with two pulleys at each end. Steel members were placed overhead in the spinning room to add the rigidity and strength necessary to carry the load of the new motors.

Lighting System

Electrical work also included the complete redesigning and rebuilding of the lighting system, Benjamin Type 79 units being installed throughout the plant. "We didn't know," said Mr. Tolar, "that we had been working in the dark hole of Calcutta until we got the new lighting system in operation in the card room." In the spinning and winding room the operatives are now working under the best of conditions, with a minimum of 25 foot-candles on the working plane. Bryant Electric Co., High Point, N. C., installed all new power and lighting wiring and equipment under supervision of Mr. Ross.

To make the light more effective the walls and ceilings are receiving a new coat of Glidden's "Spray-day-lite" white paint. This paint, which is being sprayed on, is especially prepared for the purpose.

As all power is now purchased, the old boilers are used only for heating and process steam. One of the 225-hp. HRT boilers already installed was rebuilt to fit the requirements of a heating plant, the grate surface was reduced in the interest of economy, and a new Iron Fireman stoker was installed.

While the main program is directed to the important task of bettering the product of the mill and guaranteeing its uniformity, the human relations side of the story has not been overlooked. The electrical contracts included a partial rewiring of the village, bringing electric light and power within the reach of all employees. New primaries were strung, using larger wire and raising the voltage from 110 to 2,200 volts. Transformers were installed at two points, and the village load was divided so as to provide more uniform voltage. A complete renovation of the village secondaries is contemplated in the future, with an additional transformer which will bring the village distribution system up to equal that installed in the mill.

Mill Village

The village houses, 69 in all will all be repainted using Glidden's Zincolith white. J. R. Tolar, president of the mill, takes a deep interest in the village, which is one of the oldest in this section of the state, and encourages cleanliness and orderliness there, as well as in the mill itself. "I came here to stay three weeks," said Mr. Tolar to the writer, "and now I have been here 26 years." He still gives much of his time to the affairs of the mill, the actual operation of which is in charge of his son, J. W. Tolar, who is treasurer and superintendent.

Since Jan. 1, 1938, the product of the mill has been sold through the Buscher Yarn Division, of Turner, Halsey Co., 40 Worth St., New York.

Fig. 2 Eighteen new H & B long-draft, large-package spinning frames have been installed; more are to follow

Chemists and Colorists

Discuss recent progress in textile processing at annual convention in Philadelphia

THE CORRECT FORMULA for a convention, as developed after years of research by the American Association of Textile Chemists & Colorists, consists of equal parts of business and pleasure. Gathered in the Bellevue-Stratford Hotel, Philadelphia, Dec. 3 and 4, for their seventeenth annual meeting, over 800 members of that association applied this formula by devoting a full day to the technical sessions, two evenings to entertainment. Results were highly satisfactory.

The first speaker at the Saturday morning technical session, Bertil A. Ryberg, A.A.T.C.C. Research Associate, pointed out the drawbacks of the present method for determining the soap content in scoured wool. The usual procedure of extracting scoured wool with ethyl alcohol removes extraneous material which is not soap. This is believed to be a water-soluble acid which is not extracted by ethyl ether. When scoured wool gives more than 1% of alcohol-soluble material, it is an indication that the scouring has been faulty. In the present method of testing, where the wool is extracted first with ethyl ether and then with alcohol, the ether removes some soap, and the alcohol removes the remainder of the soap plus the water-soluble acid. Efforts are now being made to develop a method for determining soap and soap only in scoured wool.

Wool Dyeing

Discussing modern wool dyeing methods from a practical viewpoint, Dr. E. W. Pierce, of Ciba Co., stated that indiscriminate use of mineral oil in lubricating wool is the greatest bugaboo which the dyer has to face. Unevenness, streaks, and spots in dyed yarns and piece goods are frequently due to use of water which has not been properly treated. For dyeing carbonized wool, Dr. Pierce suggested use of dyes containing chromium in the molecule. These dyes can also be used on loose wool, although this is usually dyed by the chrome-mordant method; in the latter method uneven chroming must be guarded against by using proper types of equipment. The new dyes containing chromium are extensively used for dyeing carpet yarns. Tops or slubbing are usually dyed with after-chrome colors, although the dye manufacturers are endeavoring to extend the use of vat dyes for this purpose. Some piece goods are dyed with mordant colors, but mostly with after-chrome dyes; the chief difficulty with after-chrome dyes is the matching of shades, and the chrome-bearing dyes are now being used quite extensively.

Alban Eavenson new president

Arthur R. Thompson new vice-president

Duncan Ferguson new vice-president

Answering the question "What can the mill man expect from fundamental research?" Dr. Milton Harris, Research Associate of the A.A.T.T.C., pointed to rayon and Lanitol as two of the outstanding examples of research in the textile and allied fields. To improve the natural fibers and to utilize the synthetic fibers to their best advantage, further research is needed. One of the first tasks is to sort out and use the large amount of data which are now available. The boundaries of science are rapidly losing their significance, and it is imperative for the investigator of fundamental textile chemistry to acquaint himself with many new fields of research. Thus, results of a research program on the chemistry of wool have indicated many parallelisms between the fundamental chemistry of this textile material and that of many biological substances which are important in studies relating to cancer, arthritis, and diabetes research.

The next speaker, Dr. Irving J. Saxl, consulting physicist, pointed out the need for a simple method for the quantitative analysis of stiffness and resiliency of yarns and fabrics. He then demonstrated a new testing device which he has developed for this purpose and which is independent of the influence of differences in the specific gravity of the sample to be tested (TEXTILE WORLD, October, 1937, p. 123). In addition to making it possible to determine the stiffness and resiliency of textiles, the apparatus is of value also in testing the effectiveness of softening agents, stiffening agents, etc.

Crease Resistant Finishes

Results of tests to evaluate crease-resistant finishes for fabrics were described by Herbert F. Schiefer, U. S. Bureau of Standards. These tests, which make use of the compressometer, the flexometer, and apparatus for determining the creasing angle, indicate that treatment with synthetic resin increases the crease resistance of fabrics up to 100% for certain cloths. Thus far, however, it has not been possible to improve the crease resistance of cotton or rayon to the same degree as is possessed by worsted.

In a discussion of metallized azo dyes, Dr. M. L. Crossley, Calco Chemical Co., presented data which show that the fastness properties of many of these colors are increased materially by combining a metal, such as copper, chromium, or iron, with the dye molecule. Thus, by metallizing, it is often possible to convert fugitive azo dyes into products which are commercially satisfactory as regards their

light fastness. Also under certain conditions some of the metallized dyes are converted into spirit-soluble dyes which are much faster to light than ordinary spirit-soluble azo products. In conjunction with his paper, Dr. Crossley presented a colored motion picture illustrating the method of metallizing azo dyes.

Outlining recent trends in textile technology, Professor Edward R. Schwarz, Massachusetts Institute of Technology, asserted that, although tensile strength of textile materials has been considered the most important and useful property of a yarn or fabric, except for particular purposes, it has little to recommend it as a measure of the quality of the material; of greater interest in many cases is the fatigue strength or the resistance of the textile to repeated stresses of less than the breaking strength. In the growing realization of the inadequacy of strength test, other measurements are being investigated. Among these are the determination of the torsional and flexural rigidity; twist conditions as they actually exist in the yarn at the time of use; resilience; tearing strength; bursting strength; plastic and elastic properties; mechanism of moisture absorption; fastness to washing, light, crocking, perspiration, abrasion, and weathering; air and water permeability; crimp; and micro-analysis of fiber, yarn, and fabric structure. Further signs of progress are the use of ultra-violet light, the spectroscope, the high-speed motion picture camera, the stroboscope, the spectrophotometric color analyzer; and the technique of X-ray diffraction analysis of the ultimate structure of fibers. Proper and adequate sampling; the problem of the precision of observation and averages of the observation; and proper and intelligent plotting of data are all receiving attention. The trend in textile technology is toward a better understanding of the fundamental properties of textile materials; it is toward intelligent interpretation of the results of research for the benefit of the textile industry and of the ultimate consumer.

Soap and Other Detergents

Speaking of detergents and their textile application, J. B. Crowe, Procter & Gamble Co., pointed out that, due to the shortage of raw materials formerly employed in manufacture of soap, there has been a search for new oils and fats. As a result, some good soaps have been developed and some bad soaps have appeared. No one soap is outstandingly superior for every purpose, although there is a swing toward the use of low-titre soaps, which—because of their greater solubility, faster rinsibility, lower degree of hydrolysis, greater stability, and high state of dispersion of hard-soap particles—appear to be better for the bulk of textile uses. The textile man should use the soap which performs most efficiently at the operating temperature of the specific process. Even the best of soaps have their drawbacks, particularly as regards their use in acid solutions or with hard water. Various synthetic detergents, including the fatty alcohol sulphates, have been developed which can be used under those and other special conditions. For example, they appear to have advantages in backwashing and in scouring rayon-acetate fabrics. Frequently they make it possible to consolidate two or more processes, such as scouring and dyeing in an acid bath. Various theories have been evolved as to why detergents clean; but the whole story is not yet known; and it is probable that a number of different properties are involved.

The importance of both visual methods and methods involving use of physical instruments in making color measurements was emphasized by Dr. I. H. Godlove, E. I. du Pont de Nemours & Co. From the consumer's viewpoint visual methods are more important; from the dye manufacturer's viewpoint, analytical methods requiring the use of instruments are also important. Use of the spectrophotometer, for example, will permit fastness scales to be made more definite and quantitative, will allow the colors of thousands of new dyes developed each year to be cataloged and filed for quick reference later, and will permit telegraphing of colors of dyes in a simple code.

Charles F. Goldthwait presented some observations on wetting, mercerizing, and dyeing of cellulose which have been noted by himself and Earl McLean during extensive studies on the processing of cotton yarns at Mellon Institute for Industrial Research. The first observation on the differential wetting of cellulose indicates that preliminary wetting of a portion of a cellulosic material with water makes that portion more resistant to further wetting. A second observation is that there seems to be a critical temperature of wetting; that is, goods initially wet out at a temperature of 195° F. dye an appreciably lighter shade than those wet out at 210° F.; the critical temperature apparently is between 200 and 212° F. Exposure of cotton to steam previous to dyeing results in appreciably lighter shades than are obtained on cotton which has not been so exposed. A third observation is that the swelling of cotton by caustic soda seems to follow the laws of compound interest; i.e., swelling proceeds faster and faster until the strength of the caustic solution is about 14½%, at which point there is a slowing down in the rate of swelling. From a concentration of 14½% to 40% swelling then proceeds at the new but slower rate. Another observation made is that the rate at which water comes out of cotton yarn depends upon the temperature. Thus, at 208° F. cotton retains 231% of its weight of water, while at 55° F. it retains 303% of its weight of water; after wringing, the cotton retains 101% and 147%, respectively. Still another observation is that different shades are obtained when dyes are mixed by different methods. The difference can be observed, for example, when one sample is dyed in a dyebath made by dissolving the required quantity of dye in the full volume of water, and another sample is dyed in a bath made by first dissolving the dye in a concentrated solution and then diluting it.

A new system of organic synthesis was described by A. Frank Bowles, E. F. Houghton & Co. In this method boric acid (or a similar weak inorganic acid) esters of an aliphatic or aromatic alcohol are first prepared and then reacted with molecular equivalents of an alcohol or acid to give either an ether or ester which may be caused to rearrange by means of the boron anhydride produced in the reaction mixture. Certain of the products thus formed can be sulphonated, some of these derivatives being of value in textile processing.

A paper "Use of Standard Dyeings in Tests for Color Fastness to Light," by William D. Appel, of the National Bureau of Standards, was presented by title.

At the supper meeting, held Friday night, Henry E. Millson of Calco Chemical Co., gave an interesting demonstration of queer forms of light, including luminescent, fluorescent, and cold light. In addition, Lloyd A. Jones, of Eastman Kodak Co., presented a colored motion picture entitled "Growing Crystals." This was followed by an entertainment and social hour.

Banquet Speakers

Speakers at the banquet held on Saturday evening were G. Coe Farrier, representing S. Davis Wilson, mayor of Philadelphia; William H. Cady, retiring president of the association; Alban Eavenson, newly elected president of the association; Dr. Ivor Griffith of Wagner Institute of Science; Dr. Louis A. Olney, president emeritus and chairman of the research committee of the association; and Hon. Franklin Spencer Edmonds. Elvin H. Killheffer, past president A.A.T.C.C., presided.

Secondary Twills

Causes of, and remedies for, a common defect in rayon fabrics

By STANLEY A. PROKUSKI

ONE OF THE most objectionable features in rayon fabrics is the appearance of a hairline running, usually, in a direction opposite to that of the twill line of the regular base weave. These lines are known as cross or secondary twills. Cross twills show up on what should be a smooth or patternless cloth, as in the case of a satin; or form a double pattern on the face of twilled fabrics. In practically all cases, attention of the eye is drawn to the unwanted line, and many times the cross twill is so plain as to give the impression of a left-hand twill, when in reality the twill is right-hand.

Reeding Primary Cause

While correct warp preparation and loom settings will greatly help to relieve this condition, improper preparation and settings are not primary reasons for the appearance of secondary twills. The condition is caused entirely by the manner in which warp ends are drawn through the reed. The wires of the reed, where they come between two warp threads, enlarge the space between the threads. If this condition exists at points where warp ends are down, the extra space allows a longer length of filling to show on the surface than would be the case where no reed wire separated two adjacent threads.

If the enlarged spaces run with the angle of the weave, they will not show any line, as it will blend with the twill line of the weave. However, if they run opposite to the twill line of the weave, the secondary twill becomes visible. This always happens when the reed wire is on the right of a right-hand-twill filling float or on the left of a left-hand-twill filling float.

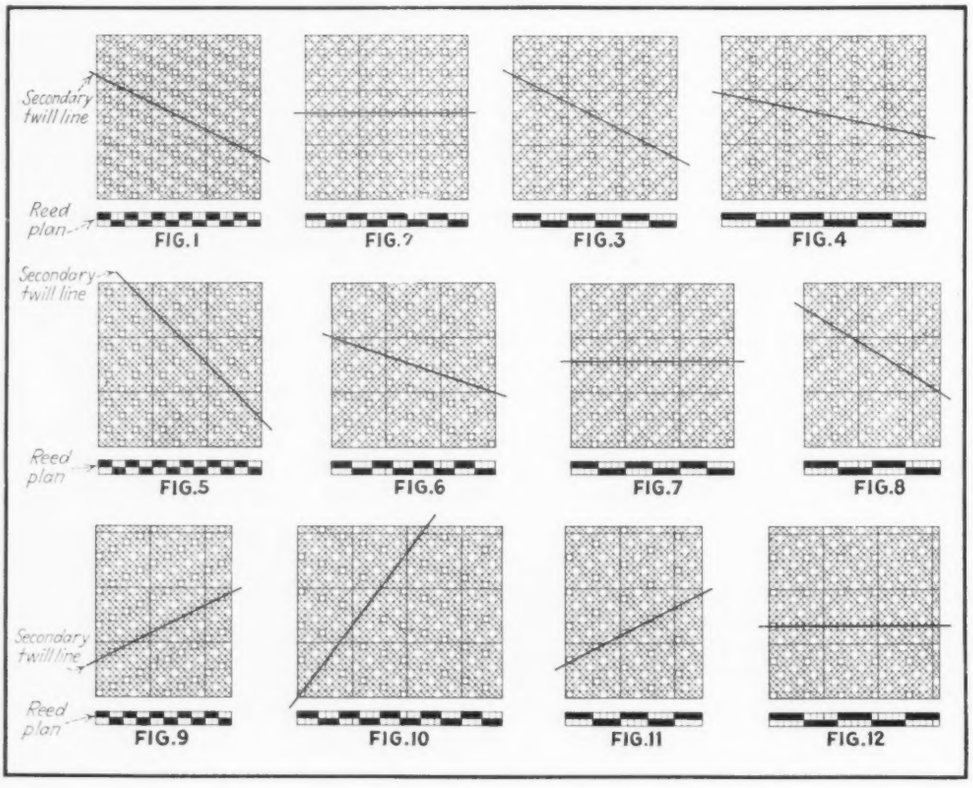
The accompanying weave designs illustrate effects created by reedings of two, three, four, and five per dent. Circles indicate enlarged spaces caused by reed wires.

Figs. 1 to 4, inclusive, show results obtained with a two-up and one-down right-hand warp twill. Cloth reeded two ends per dent (Fig. 1) shows the largest number of enlarged filling floats. The three-end reedings (Fig. 2) creates an objectionable horizontal line. Cloth reeded four per dent (Fig. 3) shows the same angle as the two-per-dent reedings in Fig. 1, but with only one-half as many spaces enlarged. Of the group, this line will be least noticeable. Fig. 4 shows a five-per-dent reeding. This creates a secondary twill which, although it has a low angle, is equally objectionable. Figs. 5 to 8, inclusive, show secondary twill lines resulting from use of the same reeding plans as in the previous group, with a three-up and one-down right hand warp twill. Figs. 9 to 12, inclusive, show lines produced with similar reedings of a five-harness satin weave, twilling to the left. In this case the secondary twill in the fabric runs to the right.

The angle of a secondary twill varies with the number of ends per dent of the reed. In some combinations the hairline runs horizontally on the cloth. Fine reeds produce more pronounced secondary twills than do coarser reeds. There is a distinct advantage in the coarse reeds used in weaving high sleys, contrary to the popular belief that a finer reed makes a finer fabric. This also explains why low-sley fabrics are particularly susceptible to cross twills.

Soft, Pliable Yarns Best

If warp yarn is sized, so that it is soft and pliable, it is likely that openings caused by the reed wires will be diminished and the warp threads slide into approximately their proper places. This will, of course, make the secondary twill less noticeable. Looms must also be set with the same purpose in mind; i.e., to make it possible for all warp ends to fall in their correct respective positions.



Knitted Crossed Diagonals

Variety of interesting pattern effects obtainable with limited number of feeds

By GEORGE L. LOGAN
Secretary, Tompkins Bros. Co.

AN INTERESTING example of what can be accomplished by combining underlap and overlap in the same pattern on a knitting machine is illustrated in Fig. 1. Of course many variations are possible, and steeper or flatter diagonal patterns can be worked out.

It is not necessary to have a great number of feeds to do this. The example shown makes use of only four feeds—two plain and two tuck feeds. The crossed effect is obtained by having one presser with 89 cuts and the other with 90 cuts. Thus the 89 cut wheel loses on the needles at the rate of 4 needles per cylinder revolution, while the 90 cut wheel gains on the needles at the same rate. Using a number of needles which is divisible by 89 with 4 left over and by 90 with 4 under, one produces a true diamond figure with two diagonals crossing each other.

In this instance, use of 716 needles would cause the diagonals to cross each other as squarely as possible, since $716 \div 89 = 8\ (+\ 4)$ and $716 \div 90 = 8\ (-\ 4)$.

A good application of the crossed diagonal principle is in its use on plush fabrics, where backing or plush wheels are used to form the pattern on the fleece side of the cloth.

Special backing wheels required

Usually, special backing wheels have to be made up with the number of blades which will correctly divide into a given number of needles. These special wheels should be made so they will be as nearly as possible the size of a standard wheel, in order to maintain a size that is practical to run under production. In other words, if the wheels are too large or too small, it will be found difficult to set them to run properly.

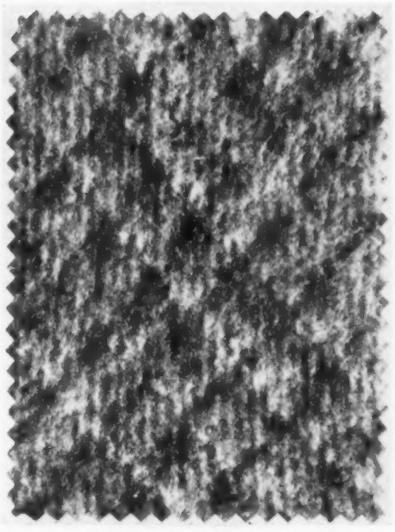


Fig. 1—Knitted pattern obtained by combining underlap and overlap

The crossing over of the diagonals gives a diamond effect, provided the lap in each direction is of the same amount of needles. If the lap is greater in one direction than in the other, the pattern will assume an appearance more nearly rectangular, rather than a true diamond shape.

The amount of lap should be determined by the number of feeds. If four feeds are used, the lap should be four; if six feeds are used, the lap should be six. This will help to maintain a more clearly shaped pattern.

The method of blocking wheels to show diagonals widely separated from one another is simply to block them one-and-one, except at points where diagonals are to show. At these points floats of two or three should be provided for. These floats will show the diagonal lines by contrast with the one-and-one. Alternating colors may also be employed. In such cases the diagonal in one direction will be of a different color from the diagonal in the other direction.

Design Layouts

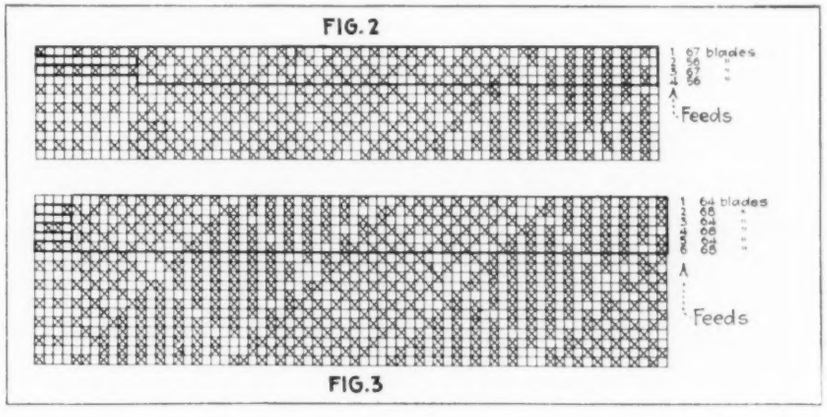
The layout of the designs, and the method of calculating for the wheels and needles on four and six feeds, is as follows: Layout for the design shown in Fig. 2, 20 gage; 26-in. cylinder; 1,068 needles; 4 feeds; backing wheel standard cuts, 48.

Calculate wheels to have as near to 48 cuts as possible while still maintaining a lap of plus four on two wheels and minus four on the other two wheels. Thus, we use a 67 cut wheel on first and third feeds, and a 56 cut wheel on second and fourth feeds.

Layout for the design shown in Fig. 3: 24 gage; 26 in. cylinder; 1,286 needles; 6 feeds; backing wheel standard cuts, 60.

Calculate wheels to have as near to 60 cuts as possible while still maintaining a lap of plus six on three wheels and minus six on the other three wheels. Thus we use a 68 cut wheel on second, fourth, and sixth feeds; and a 64 cut wheel on first, third, and fifth feeds.

In Fig. 2 the diagonals are shown fourteen wales apart, while in Fig. 3 the diagonals are sixteen wales apart. It is possible to have these diagonals at various distances from one another, depending on the size of pattern desired. Several patterns can be laid out from the same set of wheels by changing their blocking. Work of this type can also be made on single or double plush.



Spinning Rayon Staple

Tests show machine settings, roving weights, spindle speeds require close attention

By R. BRUCE WILLIAMS

CURRENT INTEREST in spun rayon fabrics has caused no little concern in those mills not already experienced in the peculiarities of rayon fiber. That rayon fiber must necessarily receive a more gentle action than cotton is quite noticeable—in spinning, as evidenced by the number of ends down; and in weaving, by the number of warp breaks.

An interesting study was made to compare manufacturing methods and the results obtained therefrom. It was desired to spin a 30/1 yarn, made from 1½-denier, 1½-in. Japanese rayon staple.

(Of the many types of rayon staple on the market, Japanese is one of the most difficult to process because of the great variance of its staple length. The lot handled in the above-mentioned experiments was classified as 1½ in.; but when a sample taken from the drawing cans was stapled, the length varied from 1½ in. to 2⅝ in. Due to this range in length, it was necessary to exercise care in drafting and supporting the fibers in the rolls. With the same care and handling, using American staple instead of Japanese, it has been found possible to produce a higher-quality yarn at less processing expense.)

The yarn was to be put on warp and filling bobbins, to be used in making a low-construction challis fabric. For experimental purposes, the stock was divided into two lots, and each lot was processed separately.

Card Flats Raised

A radical change was effected by raising the card flats from 0.008 in., the regular setting for rayon staple and the lower qualities of cotton, which was used on Lot 1, to 0.015 in., which was used for Lot 2. A few minutes before this change was made, the cards were producing 40-grain sliver with a percentage of waste to input of about 4%. Of this 1½% was flat strips. When the flats were raised, 44-grain sliver was produced, with approximately 3½% waste, 1¼% of which was flat strips. All other settings on the cards remained the same. The doffer diameter was 26 in., and the doffer run at 7½ r.p.m.

The drawings, equipped with weighted rolls and a 3-in. calender roll run at 102 r.p.m., were adjusted to produce 60-grain sliver. Lot 1, production from the regular card-flat adjustment, actually sized 58 grains and ran at 94% efficiency. (This efficiency figure represents stoppage loss due only to sources indicative of the character of the yarn, such as lap-ups, breaks caused by waste, slugs in coiler head, etc., and does not consider operator stoppages such as doffing, creeling, etc.) Lot 2, the raised flat production, sized 60 grains and ran at 97% efficiency. The frames on both lots were set the same; consequently the heavier card sliver in Lot 2 produced a heavier drawing sliver.

Efficiency Losses Analyzed

In analyzing efficiency losses, lap-ups on the rolls were found to be the major cause of machine stoppage. On Lot 1 they constituted 5% out of the 6% lost efficiency, while on Lot 2 they amounted to 1½% out of the lost 3%. Excessive static electricity in the sliver was the main reason for these lap-ups. In view of this fact, it is interesting to note how much less lapping occurred on Lot 2, the raised flat production. This seems to indicate that the more gentle scrubbing action received in cards with raised flats tends to decrease frictional static electricity in the sliver.

A similar static condition was noted in the slubbers, with the same effect. Liveliness of the sliver was probably increased somewhat because the relative humidity of the room was low—between 45 and 50%. With relative humidity increased to 60 to 65% a large percentage of the lap-ups could be eliminated.

When these two lots were run on the slubbers, a tremendous difference in operating efficiency was apparent: Lot 1 attained only 82%, while Lot 2 produced at 94%. Roll laps amounted to 10% of the lost efficiency on Lot 1, while Lot 2 had none; yarn breaks at the flyer were 4% on Lot 1 and only 1% on Lot 2; sliver breaks in the creel were 3½% on Lot 1 and 2% on Lot 2. Thus it is clearly apparent that, through the slubbers, the simple procedure of lifting card flats is an important factor in producing stronger, less electrically energetic yarn.

In the first intermediates experimentation in twist was carried on, on the theory that a stronger yarn would be produced if the turns per inch were reduced to the minimum of practicability. On Lot 1 the first intermediates were set to produce 1.50 hank roving with a twist of 0.93 turns per in. Of the total time lost by stoppage, 60% was due to crossed ends between the front roll and flyer, caused by the licking over of ruptured roving, and 26% was due to piecing-up breaks caused by roving plugging in the flyer. The balance of the stoppage was due to minor miscellaneous causes. On Lot 2 the frames were set to produce 1.50 hank roving with a twist of 0.88 turns per in. Of the total time lost in frame stoppage on this lot, 65% was due to crossed ends, and 26% to plugged flyers. On this lot approximately 27% of all breaks occurring at the flyers was caused by pieced-up joints of crossed ends, which would lead one to believe that whatever crossed ends could be eliminated would also eliminate a number of flyer breaks. Flyer speed on both lots was approximately 650 r.p.m. From the writer's experience, this seems to be slightly high. With a twist of about one turn per inch and a flyer speed of from 550 to 590 r.p.m, a fairly good job can be expected from this type of rayon.

As can be seen, the difference in twist on the first intermediates did not cause a considerable change in operating efficiency on the coarse frames, but on the second intermediates the low-twist roving in the creel had a damaging effect on the processing of the stocks. Lot 1, produced with a twist of 0.93 in the first intermediates, reached an efficiency in the second intermediates of 99%. Stoppage due to yarn defects was negligible. With Lot 2, which had 0.88 twist, the efficiency figure was cut to 88%. Both lots were drafted to 4.00 hank, with a twist of 1.64 turns per in. Flyer speed was 760 r.p.m. On Lot 2, 86% of the time lost due to frame stoppage was caused by breaks at the front roll and crossed ends. Break-backs in the creel amounted to 11% of the lost time on Lot 2, while Lot 1 had none during the time tested. Thus it would be safe to say that, although low twist

can be used on the speeder frame to little disadvantage, the following process will suffer materially in operating efficiency.

Spinning Experiments

In spinning, the chief experiments were with twist and spindle speed. A 4.00-hank, single roving was drafted to 30s count, with twist ranging from 3.10 times the square root of the count for warp yarn to 2.50 and 2.75 for filling. Tests were made with both lots at 7,200 r.p.m. spindle speed. A twist multiplier of 3.10 was used, and yarn was spun to large warp bobbins. The average ends down per 1,000 spindles per hour were approximately 47 at 54% relative humidity. At the same time, a test was made on an old lot of Japanese staple spun from 6.00 double roving backstock, using a twist multiplier of 3.65 and a spindle speed of 7,200. This old lot averaged about 28 ends down per 1,000 spindles per hour at 54% relative humidity. The old lot was much better as regards operating efficiency, and in a scan test yarn produced from the double roving revealed decidedly fewer slubs and imperfections in the yarn. When break tests were made, yarn with the 3.10 twist multiplier broke at 61¼ lb., while that with a 3.65 multiplier broke at 62¾ lb. (both break figures adjusted to size 30/1).

Filling Yarn

The first experiment in spinning to filling bobbins was made with a twist multiplier of 2.50, with 4.00-hank single roving in the creel, and the spindles run at 4,800 r.p.m. Results were poor—about 90 ends down per 1,000 spindles per hour at 48% relative humidity. The twist was increased immediately to a multiple of 2.75 and end breakage dropped to 30 in a relative humidity of 52%. It is doubtful whether the slight increase in moisture content of the atmosphere had much to do with the improved running condition of the yarn in this instance, but it is well to take notice of it.

Although the yarn ran comparatively well with a 2.75 twist multiple, spindle speed was so low as to make the cost prohibitive. Consequently, speed was raised from 4,800 to 5,700 r.p.m., still using the 2.75 twist multiple, but the ends down shot up from 30 to 100 per 1,000 spindles per hour. In view of this fact, it was apparent yarns containing low twist could not stand high spindle speed, therefore the twist multiplier was raised to 3.65 and the spindle speed established at 7,000 r.p.m. Under these conditions, the ends down dropped to approximately 36 per 1,000 spindles per hour. With a proper spindle speed of from 5,600 to 6,000 r.p.m. (for it is felt definitely that 7,000 r.p.m. is too high for spinning rayon stable direct to filling bobbins) and a reasonable twist of about 20 turns per inch (3.65 times the square root of the count), a fairly satisfactory spindle efficiency can be obtained on this stock.

Break tests were made on the filling yarn, and also on an old lot made from 6.00-hank, double roving spun with a twist of 20 turns per inch. The yarn with a 2.50 twist multiple broke at 63 lb., with a multiple of 2.75 it broke at 60 lb., and with a multiple of 3.65, at 62¾ lb. The lot spun from double roving with a multiple of 3.65, broke at 65½ lb., and showed great improvement in scan over the single-roving yarn.

Conclusions Drawn

The purpose of these experiments was to produce inexpensive yarn for a cheap fabric and yet maintain reasonable quality. As can be seen, spinning this yarn from 4.00-hank, single roving is a doubtful expense-cutting expedient, due to the low spindle efficiency. In addition, the finished yarn contained a large number of irregularities. Yarn made from double roving is appreciably superior. The main defect in the 6.00-hank, double-roving process of spinning lay in the prohibitive cost of roving organization, which included 1.50-hank first intermediates, 3.00-hank second intermediates, and 6.00-hank jacks. To overcome this high cost, jacks can safely be eliminated and 5.00-hank roving in the second intermediates can be drafted from 1.80-hank produced by the first intermediates. Spinning 30/1 yarn from 5.00-hank, double roving requires a draft of 12, which is attainable even on frames not equipped with long draft. With the revised organization described above, an inexpensive procedure presents itself and a satisfactory yarn is produced.

It would be well to note that, although some mills use light, unweighted middle rolls on spinning frames producing this yarn, the method is not altogether desirable. Space between front and back rolls will be about 2⅝ in., which would call for perfectly controlled draft at the middle. When using a light middle roll, draft on the yarn is very nearly direct from front to back roll. This leaves the fibers unsupported in the middle, and is particularly objectionable with the irregular fibers of Japanese staple. When a weighted or heavy roll is used in the middle, a more evenly distributed draft is accomplished. This helps greatly to produce yarn of smooth, even texture. Some difficulty will be experienced with lap-ups on the middle roll, but they can be minimized by coordinating the speed of the middle roll and the gage of the front roll.

In long-draft spinning of rayon staple tests showed use of double roving increased breaking strength and regularity of yarn over that produced from single roving. (Illustration shows single roving.)

Hot Water Supply System

For dyehouse will decrease steam costs, increase production

By ANDREW A. BATO
Consulting Engineer, East Orange, N. J.

IN INVESTIGATING a dyeing process from the angle of heat and power economy, we are interested in finding out how the heat can best be applied to the dye bath. It will be demonstrated that the higher the initial temperature to which the goods can be exposed, the greater are the chances for making savings in steam, power, and other operating costs. The first step, therefore, is for the dyer to determine the maximum temperature at which dyeing can be started safely. The next step is to determine how much water is required and how it can be supplied most economically. If it is found that the goods can be immersed immediately in hot water or hot dye liquor, it usually will prove advantageous to provide a hot water storage system.

At present a great number of dyehouses—possibly a large majority of the plants in the country—do not have heaters and storage tanks for supplying hot water to the machines. Even in cases in which the goods could be exposed to hot dye directly, the dye liquor is heated gradually from cold to dyeing temperature by means of live steam introduced into the bath.

This procedure has a number of disadvantages when compared to the method of having hot water "on tap."

A hot water storage system will effect a saving in time and labor, and will increase the output of the dyeing machine itself, if the dyer has hot water ready and is not forced to wait until the dye liquor is heated in the machine itself. Assuming that a dyeing process requires a total time of 2 hr. and that it takes 20 min. to heat the bath, it is reasonable to expect that with hot water available, it will take only 5 min. to heat the dye to the boiling point. This gives a saving of 15 min. out of every 2-hr. interval, or 12.5% decrease in time. In addition, the output of the machine is increased in the ratio of 8 to 7, an increase of over 14%.

Effect on Boiler Room

The next department to benefit by the hot water tank installation is the boiler room. Where tanks are not used, the boilers are subjected to a highly fluctuating load. Under normal operating conditions the steam valves are opened in many, if not all, the dyeing machines early in the day's run, and left open until the dye is boiling. This frequently overloads the boilers, thereby resulting in a considerable drop in steam pressure, and affecting, in turn, the operations of the finishing machinery.

After the first baths are brought to boiling temperatures, there is a sudden drop in the steam demand. This method of operation results in uneconomical use of fuel and high maintenance costs. It is true that this condition can be mitigated to a certain extent by staggering, or alternating the operations in the individual machines; but such a system of operation is hard to enforce, on account of the limitations it imposes on the working schedule. It is especially difficult to work out when different types of goods requiring various colors and formulas are being handled simultaneously.

Where a hot water supply system is installed, the situation is quite different. When the dyeing starts in the morning, the demand for steam will be much less severe, and of shorter duration, since it will be necessary to bring the temperature of the water only from about 200 to 212° F., instead of from 50 to 212° F. While the first batch is being dyed, the boilers have ample time to replenish the hot water supply in the storage tanks without being overloaded. Under such circumstances it is quite possible that a boiler plant of about 25% less capacity will do the work required, and will operate on a more economical basis, as regards both fuel consumption and maintenance. It is also possible that the installation of a hot water storage and supply system will eliminate the necessity of an additional boiler where the present system without the hot water tank is taxing the boiler capacity.

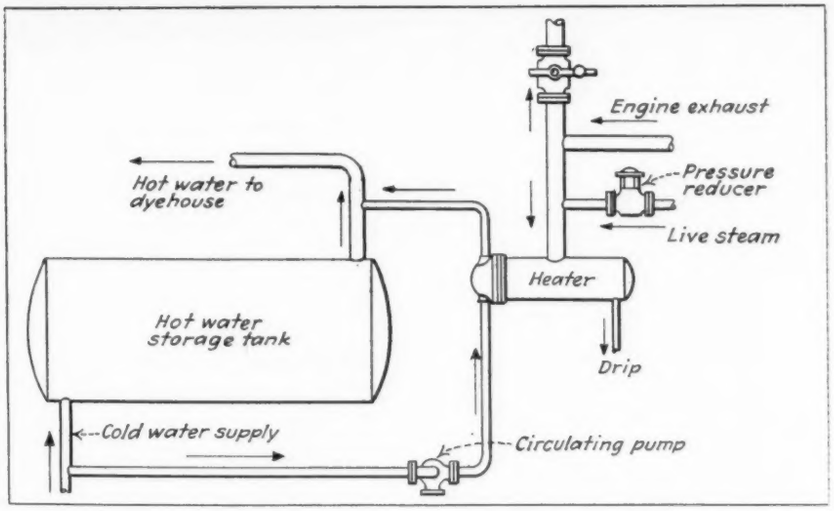
The importance of an even boiler load is appreciated in some industries where steam accumulators have been installed to prevent extreme fluctuation. These accumulators consist of large zeppelin-shaped tanks containing hot water under high pressure. The tank acts as an emergency reservoir to be drawn on in time of sudden or unusual demand for steam. When the emergency has passed and the demand for steam is low the boiler has ample opportunity to heat the water in the tank again and raise the pressure, in other words "charge" the accumulator. These accumulators are utilized where a balanced supply of live steam is required. Where hot water supply is the main problem, the more economical solution is generally the open tank, or the closed tank designed for local water supply system pressure only. (See author's discussion, Transactions A.S.M.E. May-August 1928, p. 78). A hot water tank will have the same equalizing effect on the boiler load as an accumulator of about two and one-half times its volume. On account of the difference in pressures under which they operate, a closed hot water tank requires only about one-half the wall thickness needed for an accumulator performing the same service.

Proper Design Essential

In order to derive the fullest benefit from the hot water storage and supply system, not only as storage, but as an equalizer for the boiler load, the equipment must be designed with the latter function in view. The older type of installations generally consisted of closed tanks with steam coils, the steam supply being controlled by thermostatic valves. When the tank was full of hot water, the steam supply was closed. But when there was a sudden demand for hot water and the incoming cold water rose to the level of the thermostat bulb, the steam valve opened suddenly, with a resulting heavy demand on the boiler.

In other words, the boiler load fluctuated as badly as if there were no hot water storage system in use.

The newer systems overcome this defect by providing a combination of two tanks, one being a simple storage tank with no coils in it, the other a heater tank containing coils only. As shown in the accompanying illustration, the two units are connected with circulation pipes and provided with a pump to assist in the circulation. Such a combination can be so regulated that water will be heated at a given rate corresponding to the average demand, while the peaks can be taken care of by drawing on the



Combination of heater and hot water storage tank irons out peak loads on boiler and permits utilization of surplus exhaust steam

hot water storage. This principle can be adapted to both open and closed tank systems, with the latter having the advantage that, by utilizing the city or local water supply pressure, the tank can be placed in the basement, or at any other convenient elevation and not necessarily at a raised elevation for gravity supply purposes.

The amount of fuel saved will depend on the character and fluctuations of the load under consideration. An analysis of a number of steam flow-meter charts shows that this fluctuation usually takes place in such a manner that the peak loads are about three times as great as the minimum loads; one-half of the time the load is half way between the minimum and maximum, one-fifth at peak, one-eighth at minimum, with about three fluctuations an hour from near minimum to near maximum and back.

Boiler Efficiency

Of the two conditions, partial or overload on the one hand, and frequent fluctuations from partial to overload on the other hand, the latter is far more destructive of boiler economy. Boilers generally have a fairly uniform efficiency over a wide range of loads. In a first-class installation the efficiency may be 70% at half load, 80% at full load, and 77% at 50% overload. If the duration of the load at the three stages—50%, 100%, and 150% rated capacity—is approximately the same, the resulting fuel consumption will amount to only 5% more than when operating at the most favorable load. But when the boiler is called on suddenly to pick up a high peak load, as, for instance, in jumping immediately from 50 to 150% rated capacity, the rate of fuel consumption will be in the order of that required for approximately a 200% load during the transition period. This high rate of fuel consumption is necessary, not only to carry the new load, but to heat the boiler setting, etc., to meet the new conditions. Some of the heat thus generated will be utilized again when the load drops, as it is stored in the boiler, but a large part will be lost, due to the high temperature of the flue gases, causing an additional waste of about 10%. Thus the load-equalizing effect of the hot water tank will result in a saving of approximately 15%, amounting in some cases to thousands of dollars a year.

Utilization of Exhaust Steam

A plant which generates its own power with a steam engine or turbine generator has an opportunity to utilize the exhaust steam through the use of a hot water supply system. Live steam has two important characteristics, pressure and heat. The engine, or turbine, uses practically all the pressure, but only about 10 or 15% of the heat, while the remaining 85 or 90% of the heat is still contained in the exhaust steam leaving the prime mover. This heat can be utilized for hot water heating if the required temperature is not more than 150 to 200° F. If all the heat of the exhaust can be utilized for processing, fuel costs chargeable to power alone become nominal, and power itself can be considered a byproduct.

In solving the question as to the extent to which the exhaust steam can be utilized one must consider several factors; for instance, how much hot water is required; how much live steam is used per kw.-hr.; how much exhaust steam will be produced per kw.-hr.; whether Corliss engine, uniflow engine, or turbine is used; pressure of steam generated; and whether steam used is saturated or superheated, etc.

In making an analysis of an installation, one must determine whether all the exhaust steam from the prime mover can be utilized, or whether there will be some in excess of heating and processing requirements. Also it must be determined whether or not the demand for exhaust steam exceeds the supply, in which case it will be necessary to make up the deficiency by the introduction of live steam direct from the boiler. For example, assume a plant driven by a 100-kw. slide-valve engine generating set, and requiring about 3,900 gal. of hot water heated from 50 to 200° F. in 1 hr. The generator set will use about 54 lb. of live steam per kw.-hr. or 5,400 lb. per hr.; 90% of this is 4,860 lb. We can, therefore, estimate that the heat contained in 4,860 lb. of exhaust steam is available for heating. This is just enough to raise the temperature of 3,900 gal. of water from 50 to 200° F. Such a case represents a perfect heat and power balance and is, of course, rarely met with in practice.

If the amount of the exhaust steam is not quite sufficient to do all the heating, the heat and power balance is favorable, because the lack of exhaust steam can always be made up with live steam. If there is an excess of exhaust steam, the surplus is lost. From the point of view of economy, the turbine or engine should be so selected that the heat and power balance will be safely on the favorable side under normal operating conditions. Incidentally, the higher the initial temperature at which the dyeing can be started, the larger is the amount of exhaust steam which can be used for generating hot water.

Savings

The savings that can be effected by heating the hot water with exhaust steam will depend on fuel prices and the rates charged for current. Since the engine uses only about 10% of the heat contained in the steam for power generation, only 10% of the fuel cost should be charged to power, and the remaining 90% should be charged against heating. Assuming 54 lb. of steam per kw.-hr. as above, coal at $6 a ton delivered at the boiler house, and 9.5 lb. of water evaporated per lb. of coal, we find that the fuel cost chargeable to power alone (10% of the total) will be 0.165 c. per kw.-hr. To this must be added the fixed charges and labor; the power cost thus obtained deducted from the price of purchased power will give the savings, the total amount saved varying with conditions.

[*In a subsequent article Mr. Bato will discuss further savings which can be effected by use of heat reclaimers.* —Editor.]

LOOMFIXERS' MANUAL

COTTON SECTION—*Chapter II (Concluded)*

by IVAR MOBERG

Previous instalments of the Cotton Section of the Manual have been published in the August, October, November, and December, 1937, issues. Chapters of the Wool Section have appeared in the September, November and December, 1937, issues. Readers who missed any of these instalments may procure single copies gratis, as long as the supply lasts, by writing TEXTILE WORLD.

Take-Up Calculations

IN ANY TAKE-UP calculation it is more convenient to deal with a constant than with the actual picks produced by a given combination. After the constant for a particular combination is once calculated, there is little mathematical work to find either the proper change gear or the picks per inch.

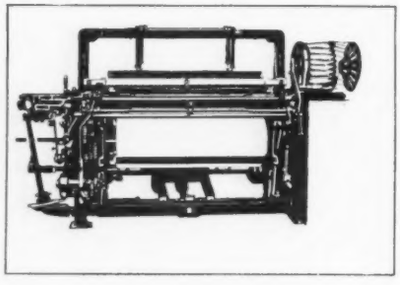
There are three methods by which constants can be utilized: (1) Reduce to a constant all invariables in the combination. Use this constant, together with all variables, in making calculations. (2) Reduce to a final constant each specific combination, so that the answer will be the number of change-gear teeth to one pick. (3) Reduce to a final constant each specific combination, so that the answer will be the number of picks per tooth of change gear.

For looms such as those illustrated in Figs. C-14 and C-15 (TEXTILE WORLD, December, 1937) the method No. 1 would result in the following equation: (Change-gear pinion × Circumference of take-up roll) ÷ (Worm gear × Take-up-roll gear) = Constant of all invariables.

Numerically, this would be: (13 × 15.7) ÷ (100 × 75) = 0.0272—Constant of invariables.

If, for example, 60 picks per inch are wanted, the complete equation would be: (Constant × Stem pinion × Picks wanted [60]) ÷ Worm lead = Change gear.

Numerically, if we were using, for instance, a 20-tooth stem pinion and



a single lead worm, the calculation would be: (.0272 × 20 × 60) ÷ 1 = 32.6, the number of teeth theoretically required in the change gear. In this case, use of a 32-tooth gear would be practical, since it makes allowance for slippage and contraction.

Method No. 2, again using as examples gear combinations of the looms shown in Figs. C-14 and C-15, would indicate this equation: (Change-gear pinion × Stem pinion × Circumference of take-up roll × Worm lead) ÷ (Worm gear × Take-up-roll gear) = Constant, in teeth of change gear for each pick.

Numerically, this would be: (13 × 20 × 15.7 × 1) ÷ (100 × 75) = .544 teeth of change gear per pick.

Now, to find the change gear for 60 picks per inch, it is necessary to make only the following quick calculation: Constant × Picks required = Change gear, or 0.544 × 60 = 32.64. As in the previous instance, a 32-tooth change gear is indicated.

To ascertain picks produced with a particular change gear, divide the number of teeth in the change gear by the constant.

Method No. 3 requires this equation: (Worm gear × Take-up-roll gear) ÷ (Worm lead × Stem pinion × Change-gear pinion × Circumference of take-up roll) = Constant, in picks per tooth of change gear.

Numerically, with same combination as in previous examples, this would be: (100 × 75) ÷ (1 × 20 × 13 × 15.7) = 1.83 picks for each tooth in the change gear.

Now, to find the change gear for 60 picks, proceed as above: Picks required ÷ Constant = Change gear, or, 60 ÷ 1.83 = 32.7. As before, a 32-tooth change gear should be used.

To find picks produced with any change gear: Constant × Change gear = Picks per inch.

Draper worm take-up motions can be calculated in the same manner described for methods 2 or 3. However, as the take-up is driven by equal gears from the bottom shaft, the constant in method No. 2 should be divided by two and the constant in method No. 3 should be multiplied by two, since the bottom shaft revolves only once for each two picks. Allowance must be made for slippage of the cloth on the take-up roll and for contraction of the cloth after it is removed from the loom. If it is assumed slippage amounts to 2% and contraction to 3%, a total of 5% must be taken off the circumference of the take-up roll by multiplying it by 0.95 (100 — 5%).

Fig. C-6 (TEXTILE WORLD, October, 1937) shows a Draper worm take-up which may have the particulars given in Fig. C-18. In this case the formula for a final constant, using method No. 2, would be: (Worm lead × Clutch pinion × Clutch-pinion-gear pinion × change-gear pinion × Circumference — 5% ÷ (Worm gear × Clutch-pinion gear × Take-up-roll gear × Value of bottom-shaft drive) = Teeth of change gear per pick. Or, numerically: (1 × 33 × 28 × 12 × 14.5 × 0.95) ÷ (30 × 121 × 42 × 2) = 0.5, the constant, in teeth of change gear per pick. It is now necessary only to multiply this constant by the number of picks wanted to ascertain the pick gear needed, or to divide the number of teeth in the change gear by the constant to determine picks per inch.

Method No. 3 would be as follows: (Worm gear × Clutch-pinion gear × Take-up-roll gear × Value of camshaft draft) ÷ (Worm lead × Clutch pinion × Clutch-pinion-gear pinion × Change-gear pinion × Circumference — 5% = Constant, in picks per tooth of change gear. Numerically: (30 × 121 × 42 × 2) ÷ (1 × 33 × 28 × 12 × 14.5 × 0.95) = 2, the constant, in picks per tooth of change gear. To ascertain the change gear needed, divide the number of picks wanted by this constant. To determine picks, multiply the constant by teeth in change gear.

Of course, it is not intended or necessary that the loomfixer go through all the above calculations every time a change in picks is required. After the constant of a particular take-up combination has once been determined, it should be kept on record and used in ascertaining the change gear, or picks, whenever a change is made.

Many cloth defects are caused by faulty take-up. Some of these, and their causes, are detailed below.

A. *Heavy places on ratchet take-up:* (1) Broken teeth in any gears. These may cause the gears to skip a tooth. (2) Badly-worn teeth in any gear, which may cause gears to slip when under strain. (3) Gears so loosely meshed that they will temporarily be forced apart under strain. (4) Eccentric-cast gears, due to the bore not being precisely centered. (5) Binding gears, caused by too close a mesh of cast gears. (6) Ratchet teeth unevenly spaced. (7) Gear teeth clogged up by lint, waste and/or grease. (8) Too much torsion, due to excessive tension. (9) Take-up pawl skipping teeth, caused by insufficient movement. (10) Hold-back pawl set too close on teeth. (11) Take-up pawl slipping over teeth, due to its/their being badly worn. (12) Hold-back pawl failing to hold ratchet on account of its being badly worn. (13) Pawls binding on their studs so that they will not drop freely onto the ratchet. (14) Holes in pawls or studs being so badly worn that the pawls will not stay on the face of the ratchet. (15) Warp-slackening device set too close. (16) Binding take-up roll, due to crooked gudgeons or waste being caught between gudgeons and bearings. (17) Cloth slipping on take-up roll, due to failure of roll covering to grip the cloth properly, or due to running the cloth too loosely. (18) Cloth slipping on take-up roll, due to insufficient contact with the roll. On take-up motions where contact or guide roll, in back of the take-up roll, is adjustable it should be set so that the greatest amount of contact with the take-up roll will be given the cloth.

B. *Heavy places on worm take-up:* Of the foregoing causes of heavy places on ratchet take-up, the following apply as well for worm take-up: Nos. 1, 2, 3, 4, 5, 7, 8, 15, 16, and 17. In addition there are: (19) Worm and worm gear badly worn, teeth broken, too loosely meshed, or using unmated worm and worm gear. (20) Clutch forced apart under strain, due to insufficient pressure of the clutch spring. (21) Slipping clutch, caused by teeth in the clutch being badly worn. (22) Bevel or helical gears, driving the worm shaft, being badly worn, or having teeth broken.

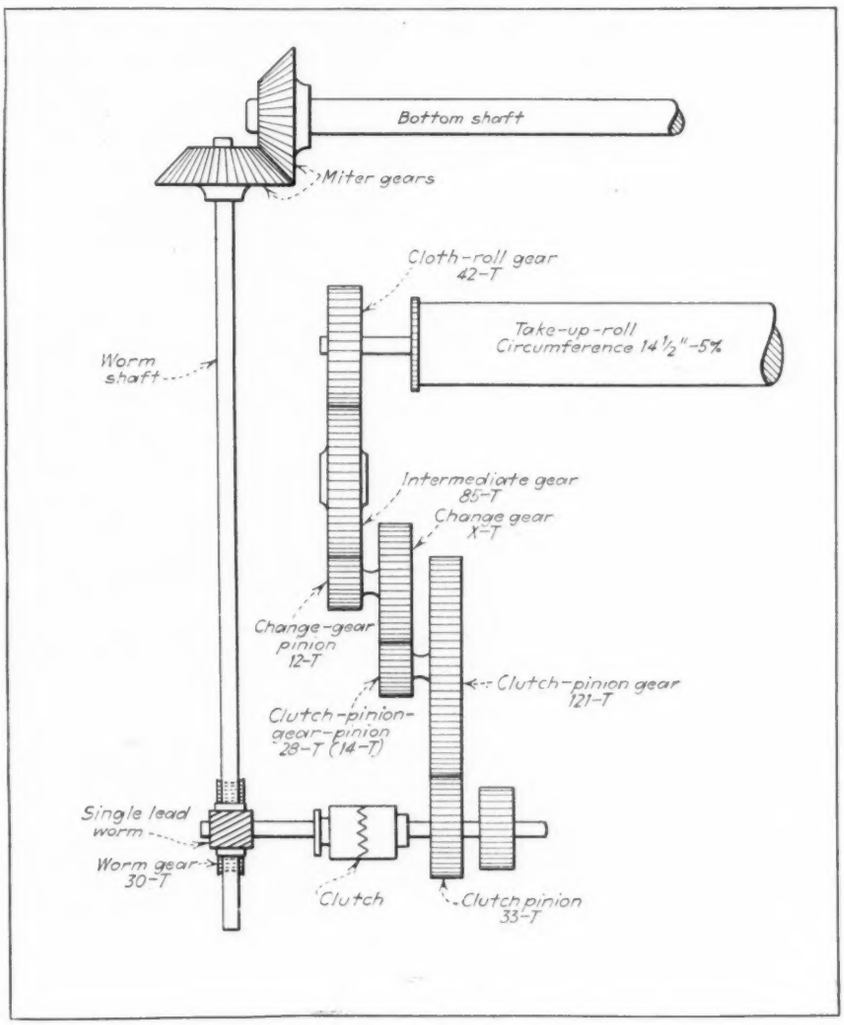
C. *Thin places:* (1) Movement of take-up pawl so great that the pawl will occasionally take up two teeth at once. (2) Eccentric-cast gears, due to poor workmanship in not centering the bore. In this case the picks in the cloth may be just right on the heavy side, but under the desired number on the light side.

D. *Uneven picks:* (1) Eccentric-cast gears. While the average picks may be correct, the cloth will be made up of over- and under-picks. (2) Crooked gudgeons in the take-up roll. (3) Take-up roll not running true. (4) Binding gears, due to their being too closely meshed or clogged with lint, waste and/or grease. (5) Waste-bound take-up-roll gudgeons.

E. *Curved or "Drawn" cloth:* (1) Take-up roll or breast beam not level and/or not parallel to the reed. (2) Contact or guide roll not parallel with take-up roll. (3) Contact or guide roll not level. This will cause the picks to lie more or less diagonally across the cloth. (4) Contact or guide roll of insufficient stiffness. In this case, the roll will sag under the tension of the cloth. (5) Cloth roll pressing against the take-up roll more at one end than at the other. (6) Weak spring on spring shaft. Where two springs are used on the spring shaft, one may be weaker than the other; this results in an uneven pressure of the cloth roll against the take-up roll. (7) Crooked and/or binding cloth roll, caused by the roll not running true and freely in its bearings. (8) Spring-shaft gears binding in the gear racks, due either to being too closely meshed or being clogged with lint and waste. (9) Combining two different take-up-roll coverings, such as, for instance, coarse and fine, sharp and dull, thick and thin. (10) Smooth place in roll covering, due to accidental injury. (11) Cloth roll not in alignment with take-up roll.

Most of these faults may also cause "telescoping" rolls of cloth, with the resultant dirty, ragged, and sometimes torn selvages.

Fig. C-18. Draper worm take-up-motion



Chapter III of Mr. Moberg's series, covering "Driving and Brake Motions," will appear in an early issue.

LOOMFIXERS' MANUAL

WOOL SECTION—*Chapter III (Continued)*

by BENJAMIN F. HAYES

As stated before, loomfixers in any branch of the industry will find much that is useful to them in those sections of the Loomfixers' Manual which are directed primarily to branches other than their own. We recommend that all loomfixers read all sections of the Manual.

Head Motions

MANY loomfixers are troubled by the first tooth on vibrator gears wearing out. Wear at this point appears not unnatural, as this tooth, being the first to connect with the cylinder when the vibrator is raised by the pattern chain, does more work than any other. It cannot, therefore, be expected to last forever, yet with proper care can often be kept in satisfactory condition for many years.

An easy and cheap way to repair a vibrator gear with a worn tooth is to have a new tooth welded on. However, in the long run, this is neither the best nor most satisfactory way to handle the problem.

Rather, it is essential to efficient operation that the loomfixer give some thought to the real cause of the excess wear of these vibrator-gear teeth. Obviously, the vibrator or the gear itself must be faulty; otherwise the vibrator gear would not wear out. If the loomfixer simply applies a new gear or has a new tooth welded on to the worn gear, giving no attention to removing the cause of the defect, wear from the same source will continue and many yards of damaged cloth may be woven.

It is true that welded teeth are often so hard they will never wear out again; it is likewise true that these hard teeth will wear on the cylinder gears. The cost of repairing one such damaged cylinder gear is many times the cost of a new vibrator gear. The best procedure to follow, therefore, is to make such tests as will enable the loomfixer to ascertain the reason for the wear. When this is known, indicated remedial steps can be taken.

Many times fixers are deceived by the fact that, when they gage vibrators which are wearing out gears, these appear perfect and so, apparently, are not at fault. This is not always the case. When vibrator gears wear out, it is due to one of two causes. It may be the vibrator is worn down too flat. Or, the hole in the center of the vibrator gear may be worn out of round. In the latter case the trouble is caused by the gear dropping so that harness cylinders, instead of striking the gear near the bottom, strike only on the top part—thus wearing out the gear.

It is important that loomfixers take extra care of vibrator gears and have some regular system of replacing vibrator runs on the vibrators. An entire set of vibrators should be kept on hand, and these should be changed as sets, not individually. For instance, if work in process is mostly on twelve harnesses, the fixer should replace twelve vibrator runs at one time.

The vibrators removed should be examined closely and repaired with new runs wherever these are necessary.

Vibrator runs are much less expensive than vibrator gears. With proper attention and sufficient oiling they will last many years, saving the mills considerable expense and the loomfixer much trouble.

Special Cylinder Gears

Fig. W6 illustrates scroll and sectional cylinder gears. These are for the purpose of breaking or splitting basket weave sheds. They are also useful when producing plain weave fabrics which have large numbers of warp threads. An additional advantage of the sectional gears is that all sections can be set to come even with each other so they may be used in the regular manner when there is no necessity for a split shed.

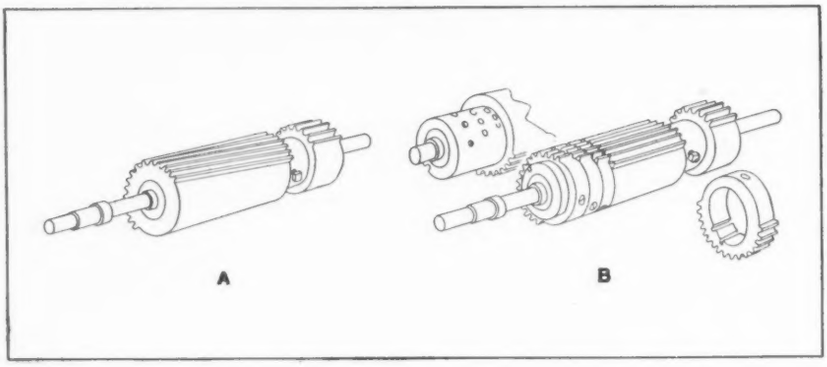
Of course, many looms are not equipped with cylinder gears of either of these types. Yet, it is sometimes necessary or desirable to split sheds on these looms. Good results may be obtained by breaking the shed as described below. With, for instance, a plain weave on eight harnesses, set the first and second stirrups in the first notch, the third and fourth stirrups in the fourth notch, the fifth and sixth stirrups in the second notch, and the seventh and eighth stirrups in the sixth notch.

Split sheds can also be obtained by means of special drawing-in drafts. Instead of drawing the warp in straight, one to eight, the ends can be drawn in: one, five, two, six, three, seven, four, eight. This obviates the necessity either of scroll or sectional cylinder gears or special arrangement of stirrups, and makes a very satisfactory working arrangement.

Combs

Head-motion combs are important and should not be neglected. Two of these combs keep the vibrators in perfect line, and two keep the jacks in line. With proper care these will last for years, but sometimes their teeth get broken, and therefore loomfixers should inspect every comb every time a warp runs out. Those having broken teeth should be removed and replaced with new or repaired combs.

Fig. W6—(A) Scroll cylinder gear, (B) Sectional cylinder gear



The French Comb

Procedure for starting new grades of wool and remedies for defects which may be noted

By JOHN C. LOWE*
Lowell Textile Institute

WHEN THE French comb is to be started on a new grade of wool, the following procedure should be adopted: (1) Analyze the wool and decide on the desired percentage of noil. From this determine the "nip setting." (2) Put on the finisher segment recommended for the quality of wool to be combed. Examine pins of preparer segment. (3) Change the nip setting and then reset both the top comb and shovel. (4) Change the feed gear as required for the new lot. The feed-comb and feed-grate settings must be modified to harmonize with the change in feed. It is well to check the top-comb setting whenever the feed-comb setting is changed. (5) Change quadrant setting to obtain desired detaching-roll forward movement. (6) Examine the apron and comb. Be sure the latter has been thoroughly lubricated.

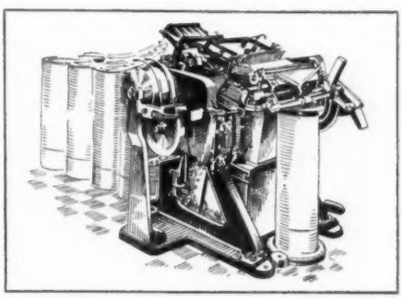
Starting Operations

The comb is now ready to be started, and the operation should be conducted in the following manner: (1) Thread the ends through the guides. Top comb is "up." (2) Remove the top feed roll. Take slivers in groups of four or more and pull through until their ends reach to the detaching rolls. Do this from the back of the comb. (3) Replace the top feed roll, making sure springs are in position. Now take each group of slivers and turn them back in a loop over the feed rolls. (4) Raise the feed comb. Take the special steel plate provided and fold the ends of each group of slivers over the edge of the plate about 2 or 3 in. Then force the group of slivers through the feed grate, through the open nip with the ends set against the nip of the detaching rolls. It is important to have the detaching rolls close to the nip, with the piecing-up segment clear—out of contact with the piecing-up gear on the detaching roll. (5) Drop the feed comb; replace its two springs; using a wrench, turn the detaching rolls to detach the ends of the slivers. (6) With the top comb still up, make a few nips. This will straighten the end of the lap and prepare it for the top comb. Be sure to examine the lap at the nip. Sometimes an end may not have been threaded properly. (7) Drop the top comb, turn a few nips by hand, putting the bur knife in action, if required. (8) Start the comb and let it run so that observations may be made as follows: (a) See that the feed-gear-ratchet pawl is working properly. (b) Observe the tension between feed rolls and feed grate. (c) Examine the veil on the apron to determine whether it is satisfactory or not.

Two defects commonly observed when starting new lots, and their causes, are described below:

Uneven Sliver. If the feed grate and feed comb are stretching the lap, the sliver will appear to be cut. Sometimes the feed comb is not raised enough and the top layer of slivers puckers up behind it, producing an uneven veil. If the top comb is set too deep, it will cause a cut or uneven sliver. Another common cause is incorrect setting of the quadrant. Generally the forward movement of the detaching rolls is excessive. Tension may be too great between the press rolls and the detaching rolls. Faulty detaching will also cause unevenness. If the veil is correct in the center but faulty at each end of the detaching roll, there is not enough pressure; excessive pressure produces a reverse condition.

The setting of the sword may be too great or uneven. A good veil or a good piecing cannot be made unless this setting is perfect. Tension and condition of the apron, length of the piecing movement, use and timing of the proper feed cam and length of rotation of the detaching rolls both for detaching and piecing are all important factors in the production of an even end from the comb.



Neppy Sliver. If the sliver is neppy, setting of the nip to the cylinder may not be close enough. The dabbing brush may be worn or not set deep enough. The bur knife may be out of action. The finisher segment may not be fine enough; if it has not been changed, it may be defective. The brush may be out of set. Neppy work from these causes would show in the head end of each fringe or draw. Neps in other parts of its length may be due to several causes. The top comb may be the cause if it is not fine enough as regards pinning, if it is set too shallow, or if it is set too far from the detaching rolls. The shovel may be set too far from the top comb. If the sword is detaching long fibers, the counter sword may not be set high enough to hold fibers in the top comb.

In addition to the causes mentioned, neppy work may result because the lap is too heavy, due to the feed being excessive. The nip setting may be too short, with the result there is not enough noil being removed and not enough recombing being done both by cylinder and top comb. Carding may be poor, gilling may not be sufficient, or there may be excess moisture in the stock. Many times, after the comb has been running a while, neps may be due to a fouled cylinder or damaged pins in either the top comb or the cylinder. Keep the pins clean and well set. Strip the doffer frequently. Keep the nip clean. Make piecings carefully.

Precise Adjustment Necessary

Efficiency of the French comb is dependent upon exact settings, proper selection of pinning, efficient carding and gilling, and correct conditions of moisture and oil content, supported by correct temperatures of machines and air, as well as sufficient relative humidity.

This concludes a series of three articles on the French Comb, written by Professor Lowe. Previous instalments were published in the October and December, 1937, issues of TEXTILE WORLD.

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Staple Cotton Fabrics

By **JOHN HOYE**, *Fabric Technician with W. Harris Thurston, New York*

This twenty-fifth installment of Mr. Hoye's series of articles on staple cotton fabrics—which began in the January, 1936, issue—concerns chambrays

CHAMBRAY

CHAMBRAY is a shirting and dress fabric made with colored warp yarns (usually blue) and white filling yarns. Ordinarily, it is woven in a plain weave. The result is a mottled or modified color effect, which is known as a chambray effect. For the filling, a lighter shade of the warp color is sometimes used instead of white. This does not produce so good a contrast but still gives a chambray effect. Colored warp and white filling yarns are also used in broadcloth or in oxford shirtings—called chambray broadcloths or chambray oxfords.

Chambray shirting is sometimes varied by an end-and-end effect—instead of using all colored warp ends, one end of color is used alternately with one end of white. The filling is usually all white. Because less color is used in fabrics of this type, a more or less pastel chambray effect is obtained. This end-and-end effect is also employed in other cloths, such as broadcloth and madras.

There are two distinct types of chambray—fine-yarn shirting or dress chambray and coarse-yarn work-shirt chambray.

Fine-yarn shirting and dress chambray is usually made of combed yarns. Its construction is high, usually about square, 80x76 and upwards, and weights are usually lighter than the work-shirt chambrays. Selvages are white. As a rule, vat colors are used on dress and shirting chambrays and, in converting, they are usually bleached and either plain finished or mercerized. In addition, they are often Sanforized or preshrunk by other methods.

The end-and-end effects are used mostly in this fine-yarn type of chambray. Although most dress-fabric chambrays are plain, a few domestic and imported qualities have the chambray ground decorated with clipped designs or small dobby effects.

Dress chambrays with the end-and-end effect are sometimes confused with the shirting madras and often are called end-and-end madras. These are distinguishable as chambrays by the plain weave used.

Yarns: 40s to 50s, combed.

Uses: Shirts, shorts, women's and children's wash dresses, rompers, etc.

Examples of fine-yarn chambrays:

Plain: 38 in. 80x76—4.80 yd. 38½ in. 88x76—5.45 yd. 38 in. 88x92—5.10 yd. 38 in. 88x90—5.10 yd.

End-and-end: 40 in. 80x76—4.85 yd.

Dobby: 38 in. 80x72—4.90 yd.

A large yardage of work-shirt chambrays is made, in several standard constructions and weights. Carded yarns are always used, the warp is usually heavier than the filling, and there are many more warp threads than filling threads per inch. Colored warp yarns are woven with gray or unbleached filling yarns in a plain weave. As these cloths are not bleached, filling yarns remain gray. Indigo or sulphur blue is used for the warp yarns. Tinted or dyed filling yarns are also used in this fabric. These yarns are of the same color cast as the warp yarns but of lighter shades to show contrast. Medium and heavy qualities are used for men's work shirts, and lighter qualities are used for women's and children's wear. The light-weight cloths are made plain as well as with stripes, checks, and all-over dobby woven designs on chambray backgrounds. The latter are known as fancy chambrays.

Work fabric chambrays are not bleached, mercerized, or shrunk, as are dress chambrays, but are given a mill finish. This usually is done in the mill in which they are made and consists of running the fabric through a hot starch solution to give a slight firmness to the cloth. This sizing is often necessary, because, without such assistance, the cloth, especially in the lighter-weight fabrics, would become soft or raggy by the time it was handled, cut, and made up into garments. After sizing, the cloth is usually calendered.

As a general rule, in buying and selling work shirt chambrays, no mention is made of construction—only width and weight (yd. per lb.) are stated.

Yarns: Usually from 12s to 28s, with 30s to 40s used in a few constructions.

Uses: Work shirts, aprons, caps, overalls, play suits, women's and children's clothes.

Examples of carded-yarn chambrays:

12s to 16s yarns:

36 in. 60x46—2.75 yd.
38 in. 54x42—2.50 yd.
36 in. 54x32—3.25 yd.
32 in. 48x34—4.25 yd.
28 in. 44x36—5.00 yd.
36 in. 50x38—3.20 yd.
28½ in. 48x40—4.40 yd.

18s to 28s yarns:

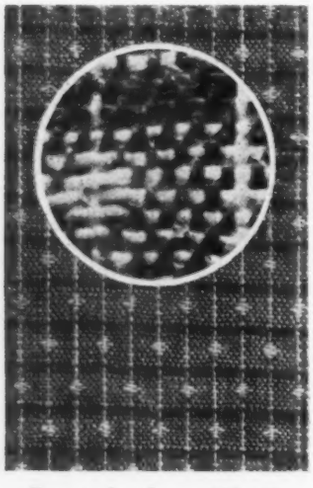
36 in. 70x44—3.90 yd.
36 in. 66x46—3.70 yd.
36 in. 65x44—4.85 yd.
36 in. 66x46—4.00 yd.
37 in. 68x47—3.96 yd.
37 in. 66x58—3.00 yd.
32 in. 68x48—4.40 yd.
29 in. 56x38—6.15 yd.
28 in. 66x48—5.00 yd.
36 in. 68x48—3.20 yd.
36 in. 66x46—4.50 yd.
28 in. 68x48—5.10 yd.
32 in. 68x40—5.00 yd.
29 in. 56x38—6.15 yd.
36 in. 64x44—3.90 yd.
28 in. 56x36—6.40 yd.
25 in. 62x44—7.75 yd.
28½ in. 66x40—5.75 yd
36 in. 66x44—4.25 yd.
36 in. 68x56—3.90 yd

30s to 40s yarns:

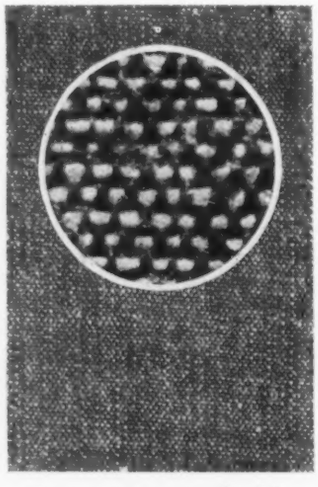
36 in. 62x44—5.00 yd.

Fancy Chambrays, 18s to 28s yarns:

28 in. 66x46—5.00 yd. (Dobby)
32 in. 62x48—4.50 yd. (Dobby)
25 in. 66x40—7.50 yd. (Stripes and checks)



Fancy chambray—32", 62x 48, 4.50 yd., carded yarns.



Coarse-yarn work-shirt chambray—35", 66x44, 3.90 yd., plain weave, carded yarns.

Versatile always, the new fiber makes a glamorous fabric for evening gowns, even as it serves equally well for daytime purposes (American Viscose Corp.)

Spun Rayon Versatility

As the Camera Sees It

By JOHN BLACK
Assistant Editor, TEXTILE WORLD

IT SEEMS only yesterday that the textile industry, studying the prospects for spun rayon, asked "what merchandise can be made of it?" Today, in the light of spun rayon's remarkable progress, that question might well be turned the other way. Rather, one asks now, what merchandise can *not* be made of it! Certainly, as the accompanying pages testify, this newest of the rayons is making giant strides toward acceptance in most major textile markets.

It has swept into quick popularity throughout the apparel field including —for women—all-purpose dresses, undergarments, knitwear, and accessories, and—for men—shirts, ties, suits, socks, underwear, to cite only a few lines. It has pushed into the drapery and upholstery fields, and is rapidly establishing itself in various branches of the towel market. But the end is not yet. Experiments are proceeding in many other directions, and the current season is destined to bring forth many new surprises, showing further the unusual versatility of spun rayon; promising markets include carpets, winter blankets, men's overcoats, etc. Some of these have not yet reached the commercial field, and, therefore, are being carefully kept out of the eye of the camera; hence they are not represented in these pages. Extended application of this fiber to the apparel and house furnishings field seems to be definitely on the cards. Indeed, spun rayon has proved itself so adaptable as to suggest that ere long we will find equally important uses for it in the industrial market, following the trend taken last year by its elder sister, continuous filament rayon.

It is particularly characteristic of spun rayon that such merchandise when photographed, bears strong resemblance to merchandise made of the older textiles. Spun rayon assumes, to a startlingly realistic degree, the appearance and hand of whatever fiber it simulates, be it wool, spun silk, cotton, linen, or what you will. As the accompanying gallery of products shows, the new textile subordinates its

own identity, emerging in fabrics which are variously wool-like, cotton-like, linen-like, etc.

In studying the market story these pictures tell, it should be kept in mind that much of the merchandise is so new that no gage as to consumer acceptance is yet possible. This is especially true of some of the spring 1938 constructions, developed a few months ago. These fabrics were rushed to the cutters, made up and modeled ahead of normal schedule, so that photographs might be available for this section. Fabric-development divisions of yarn-producing companies, weavers, and garment manufacturers have exerted special effort to make this assembly of spun rayon photographs representative and up-to-date. Thanks are due to the development executives of these divisions for their cooperation.

Spun rayon's conquest of the hopsacking field was a "natural." Simple tailored styling of this blouse accents the dignity of the hopsacking fabric (Pictures on this page—DuPont)

The men's lounging robe field is developing a good market for the new fiber. This garment is made of a spun rayon fabric like fine French challis

Spun rayon becomes a direct competitor of winterweight woolens in this hopsacking suit, made of 85 to 90% spun rayon and 10 to 15% wool

Men's suitings offer a major market. This suit, of the popular Congo cloth, gives a foretaste of what is immediately ahead

SPUN RAYON VERSATILITY

Linen-like weave of Crown spun rayon used in play ensemble: (a) bandeau and shorts, worn under (b) slacks and blouse (American Viscose Corp.)

Women's knitted gloves of spun rayon (Julius Kayser & Co.)

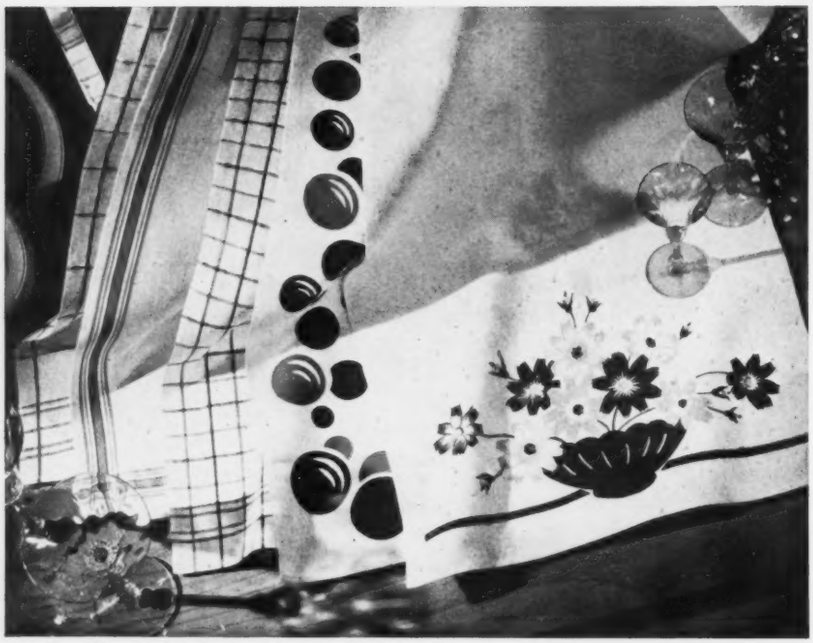
Knitted spun rayon undergarment for women (Laros Textiles Co.)

The fabric of these Snia Fiocco slacks for men has an unusually soft hand and is notable for its coolness (Meyer & Marks Yarn Co.)

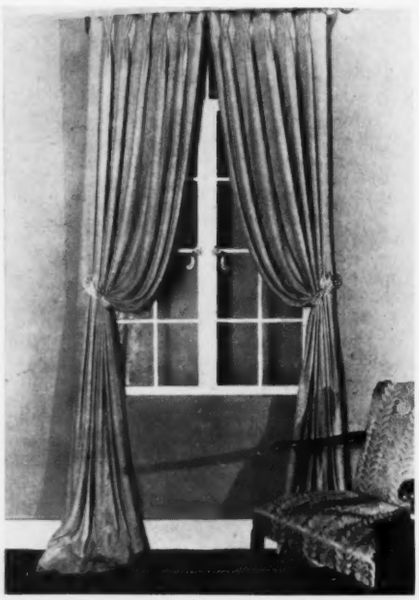
And as for the male accessories! Shirts, ties and mufflers are only a few of the far-flung fields to which the new fiber is rapidly adapting itself. The ties are all-spun rayon, shirts and muffler 85% spun rayon, 15% wool (DuPont)

The new Celanese spun rayons are a highlight of the 1938 spring season. This suit fabric is made of 80% Celanese and 20% wool yarn

SPUN RAYON VERSATILITY

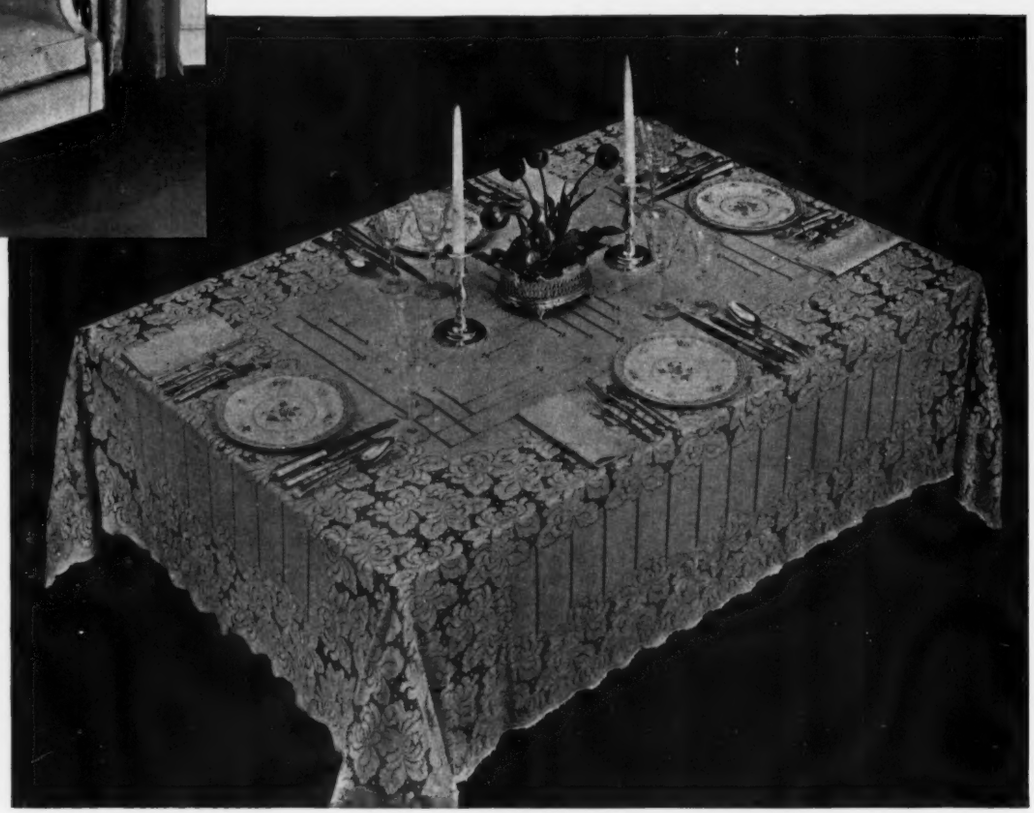


Good absorbency is a major advantage of these dish towels, which are made of 45% spun rayon, 17% linen and 38% cotton. Made by Wellington Sears Co., of Du Pont yarn

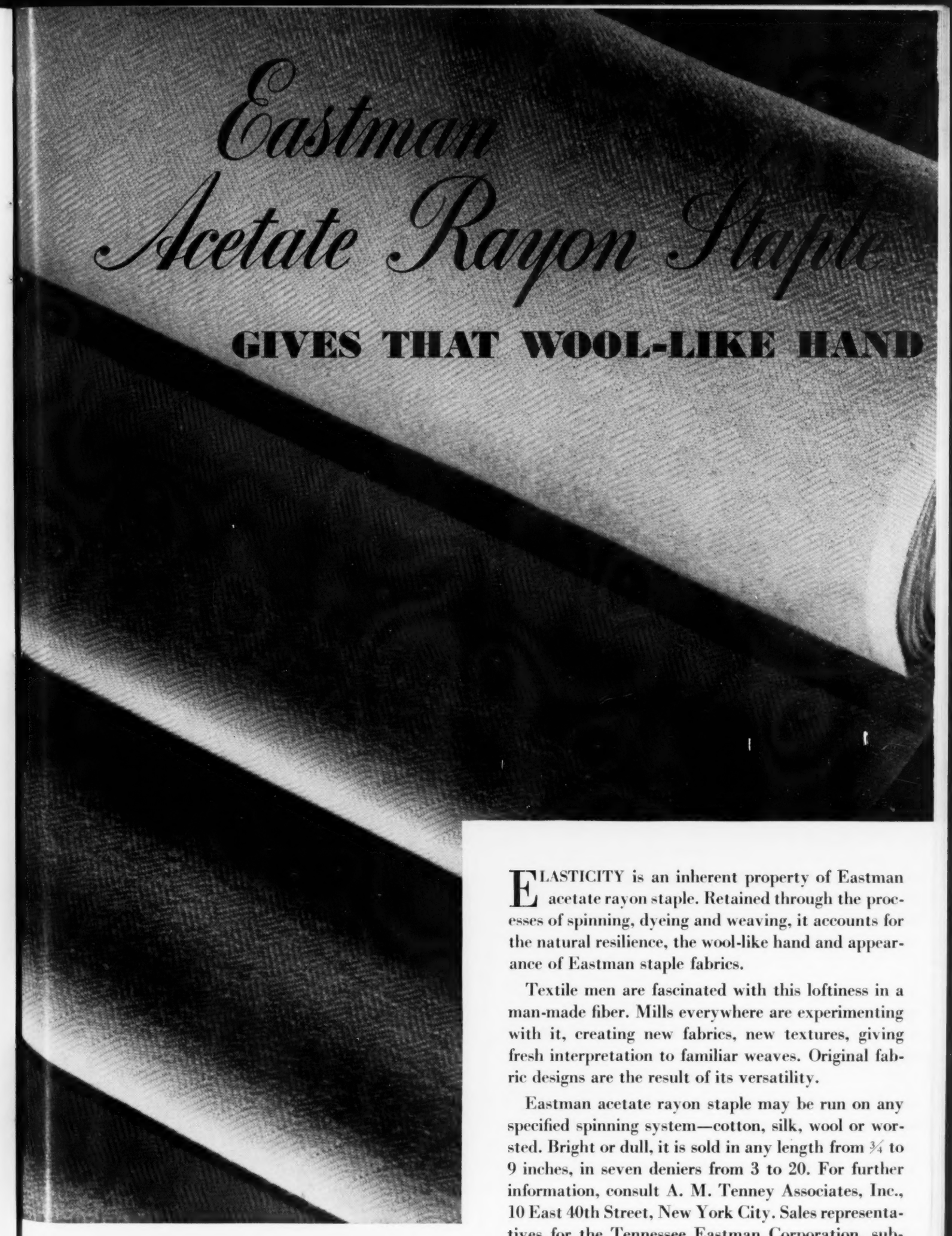


Cohn-Hall-Marx liked their own new "Granada" fabric, made of Snia Fiocco yarn so much that they used it for drapes which now decorate the company's new showroom, at right (Meyer & Marks Yarn Co.)

A room in the Hotel Ambassador, New York, shows a chair upholstered in "Wulrae," a new Du Pont spun rayon fabric which has a nubby weave, wrinkle-proof surface, and interesting light effects (left)



Beauty and distinction mark this spun rayon table cloth recently introduced by Scranton Lace Co. (Du Pont)



Eastman Acetate Rayon Staple

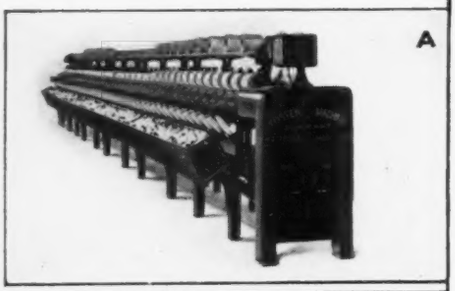
GIVES THAT WOOL-LIKE HAND

ELASTICITY is an inherent property of Eastman acetate rayon staple. Retained through the processes of spinning, dyeing and weaving, it accounts for the natural resilience, the wool-like hand and appearance of Eastman staple fabrics.

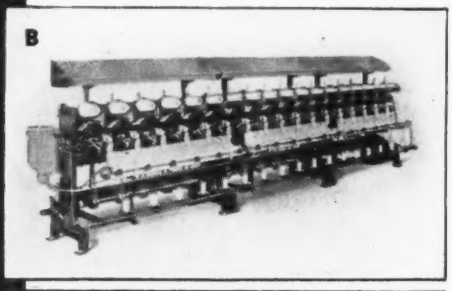
Textile men are fascinated with this loftiness in a man-made fiber. Mills everywhere are experimenting with it, creating new fabrics, new textures, giving fresh interpretation to familiar weaves. Original fabric designs are the result of its versatility.

Eastman acetate rayon staple may be run on any specified spinning system—cotton, silk, wool or worsted. Bright or dull, it is sold in any length from ¾ to 9 inches, in seven deniers from 3 to 20. For further information, consult A. M. Tenney Associates, Inc., 10 East 40th Street, New York City. Sales representatives for the Tennessee Eastman Corporation, subsidiary of the Eastman Kodak Company.

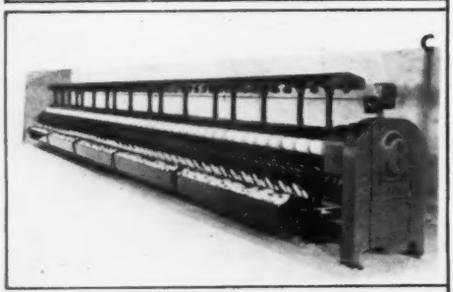
WHAT IS YOUR WINDING PROBLEM?



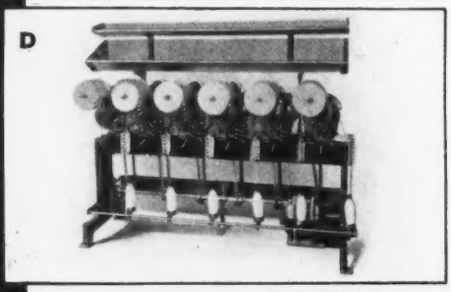
A MODEL 102 TUBE OR CHEESE WINDER, drum wind, for ordinary parallel tubes or dyeing packages (rigid tube or spring tube type). 9½" spindle gauge, 6" traverse. Up to 600 Y.P.M. 20 to 100 spindles 1 to 2 H.P. motor on either side



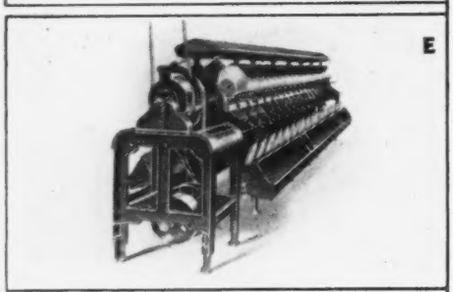
B MODEL 75, precise wind, for silk or rayon cones or tubes. Up to 6" traverse. Spindle speed from 800 to 1500 R.P.M. Conditioning attachment optional. ¾ to 3 H.P., 6 to 36 spindles.



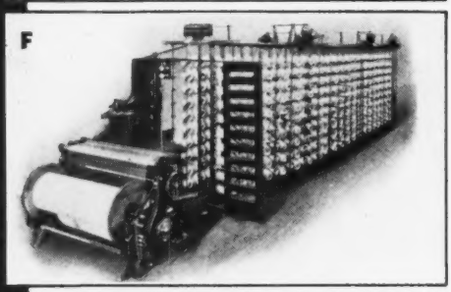
C MODEL 57, drum type doubling winder for cotton and worsted tubes. 9" max. dia., 6" traverse. Specially adapted for thread manufacturing. Speeds up to 400 Y.P.M. Slub catching attachments. 3 to 5 H.P., 20 to 100 spindles.



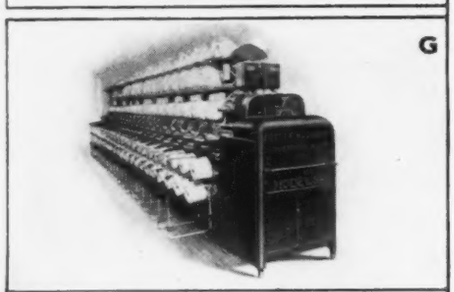
D MODEL 77, precise wind for carpet warp, twine, cordage and other heavy materials. Tubes up to 9" dia., 8" traverse. Spindle speed up to 1200 R.P.M., 6 to 24 spindles in line. Clutches and loose pulleys eliminated. 1½ to 6 H.P.



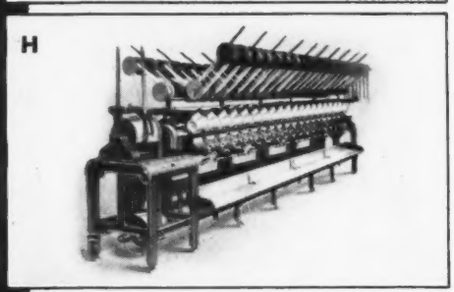
E MODEL 35A LONG TRAVERSE CONE WINDER. Drum wind. Max. dia. of cone 10" Traverse 8" Attachments for winding from skein if desired. 20 to 80 spindles. 2 to 5 H.P.



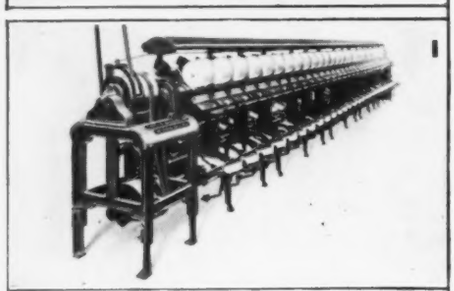
F MAGAZINE CONE CREEL for high speed warping at 300 to 550 Y.P.M. Used with Model 102 Cone winder. Two cones provided for each warper end, ends being tied together to eliminate stops for creeling.



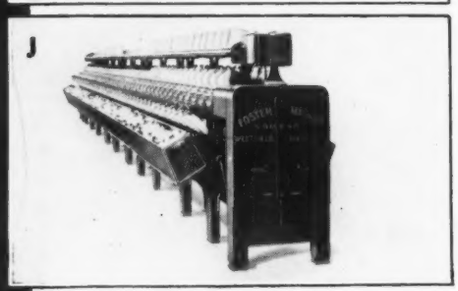
G MODEL 56B DOUBLER. Doubles and cleans yarn 2, 3, 4, or 5 ends in one process or from cones after winding and cleaning on Model 102. Drum wind. Uses wood tube. Max. dia. of pkg. 10", Yarn speed up to 400 Y.P.M. Each side independently motor driven, 1½ to 2 H.P. 20 to 80 spindles.



H MODEL 12D CONE WINDER for sweater and outerwear mills. Drum wind. Max. dia. of pkg. 8". 6" traverse. Special waxing attachment. Min breakage from snarls. Belt or M.D. (3 to 5 H.P.) 10 to 100 spindles.



I MODEL 23 TIRE CORD WINDER. Drum wind. Max. dia. of pkg. 12½", 9" traverse. Speeds governed by rotating or overend supply. Wood or paper cones or parallel tube. 20 to 60 spindles. Belt or M.D., 3 to 5 H.P.



J MODEL 102 CONE WINDER, drum type 9½" spindle gauge, 6" traverse. Speeds up to 600 Y.P.M. 20 to 100 spindles. 1 to 2 H.P. motor on either side.

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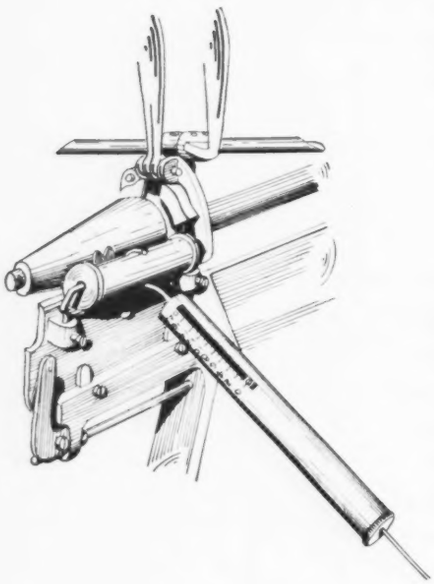
GETTING THE MOST FROM WINDING

Information about winding designed to show improvements in winding equipment and new ideas in the winding operation



PRESSURE GAUGE
(No. 50 Winder)

In order to check the uniformity of pressure on winding spindles without resorting to the judgment of the operator, the Pressure Gauge was designed. Readings should be taken from several spindles with packages of various diameters. A comparison of these readings will show the spindles that need adjustment. Separate readings can be taken with the dog in contact with the dog segment; and compared with the amount of pressure when the dog is tied back. This will assist in making a special adjustment of the dog to get more uniform results.

But the package produced is the final test of quality, and pressure is only one of the adjustments necessary in order to get the best results from winding.

"SPINDLE CREEP"
(No. 90 Winder)

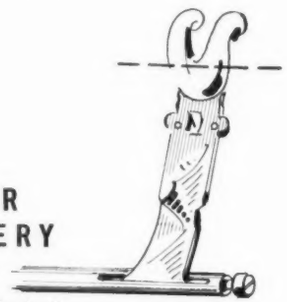
When the stopping or sizing mechanism goes into operation, the spindle normally comes to a full stop. Should the spindle "creep" (continue to revolve slowly), it is probable that the clutch lever has worn down, causing it to bottom in the clutch. To overcome this, it may be possible to file a little off the bottom of the clutch lever, but eventually it will have to be replaced.

"CORKSCREW" BOBBINS
(No. 90 Winder)

A "corkscrew" effect on the outside of a bobbin is most likely to be caused by a slipping clutch, resulting in a variation in speed. The clutch spring may be weak, as the result of constant use, and should be replaced. If a new spring is not available, a temporary adjustment can be made by removing the spindle far enough to take out the spring and stretch it; this will provide enough tension to prevent the clutch from slipping. It is also possible that the clutch may be bottoming, making a poor contact.

A poor fit between the bobbin and spindle will also result in a "corkscrew" effect, because the bobbin will slip on the spindle. Or the spindle may not be running true, in which case it should be straightened.

Other possible causes of "corkscrew" include a bent traverse wheel, a worn hub or traverse bar (either of which should be replaced) and dirt on the hub, causing sticking. The traverse tension spring may also cause trouble. If it is too tight, the traverse wheel will bind; if it is too loose, it will spin.



PROPER DELIVERY POINT
(No. 50 Winder)

For good winding, the delivery of the yarn from the button guide to the package should occur at the right point. An easy way to check this, is to place a piece of carbon paper between the empty cone and the button guide. When pulled out, the carbon will leave a smudge on the guide. If this smudge is just below the V in the guide, the delivery point is proper for good winding.

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THE EDITOR SAYS

Wages and the Recession

SHADES OF 1930! Headlines which occurred then in the still-young depression are re-appearing in these early days of the new recession, or depression, or whatever you want to call it.

Here is one that is particularly ominous so far as this observer is concerned: "Sprague Asserts Recovery Awaits Price and Pay Cuts."

Who does not remember the two schools of thought in the post-1929 era: one group advocating maintenance of existing wage-scales, and the other urging liquidation? The former group was in the saddle for a while but gradually the wage-cut adherents pushed their opponents off. And, boy, how the new riders did ride!

Who will ever forget the limitless resourcefulness of certain types of employers in finding new ways to cut wage costs? Who will ever forget the anguish which well-intentioned employers suffered as they found themselves forced to follow suit, if they were to stay in business at all? Who will ever forget the gradual drying up of purchasing power, due to the contraction of consumer income to a point where only the bare necessities of life were possible? Who will ever forget the hopelessness which characterized the American people during those long months when they were sloshing around at the bottom of the wage-cut pit?

Must we go down that trail again?

That, we believe, is the most important question facing American industry in this immediate situation.

Particularly is it necessary that each industry consider the problem in terms of its own conditions, and not academically. Some will grasp at Professor Sprague's comment as an endorsement of wage-cutting in all industries. It was nothing of the kind. He was referring specifically to the capital goods industries, and to those where the number of producers is limited. He spoke of the direct control of wages and prices which such a confined group can exercise.

The textile industry, as a consumer goods industry, cannot grasp the Sprague headline as a way out.

True, there has been sharp increase in the textile wage level in the last few years. But, we believe, no intelligent textile manufacturer will contend that they are too high from a social standpoint. They are too high, only if they are curtailing employment possibilities in the industry. At the moment, there is no evidence to that effect.

Let us warn our readers of one type of "manufactured" evidence which may be forthcoming soon. A company induces its employees to accept a wage-cut in order to permit the mill to run. The wage-cut is used as the basis for a price-cut in the market. The cycle is started. The new price becomes a competitive level, and gradually the market sifts down to it. That sort of "evidence" should be considered at its face value.

Here is our conclusion: We do not maintain that present wage-scales in textiles are inviolate. We merely insist that they should not be changed because of some trend in a non-related industry, but rather that they should be reduced only if such action will help both employers and employees.

Obviously, it is hard to expect 100% observance of this principle in an industry composed of thousands of independent units. All that *can* be expected is that the ethical, intelligent majority—usually estimated at about 85%—will resist to the last ditch the efforts of the minority.

Or else . . . . . back to 1930!

Leaderless Washington

ALTHOUGH NOT ONE who "views with alarm" automatically, we must confess to being aghast at the present outlook in Washington.

The country apparently faces the prospect of a leaderless, floundering Government during the ensuing session. The failure of the special session to accomplish anything except authorization of expenses for members of Congress is a clear indication of what we may expect. That session had one grand chance to restore confidence and to spur lagging business: by repeal or drastic revision of the undistributed profits tax. It completely muffed that chance.

To make things worse, some of the statements which have come out of the Administration even in these trying days reveal a complete lack of realization of the need in the present situation. Instead of tending to restore confidence, statements like those of Secretary Ickes and Robert H. Jackson, assistant attorney-general, convert jitters into St. Vitus' dance. Pulling out the old "monopoly" bogy at a time when great problems press for solution is probably the most stupid act that has been staged to date.

Under the conditions now existing at Washington, the chances of sane legislation are extremely remote. Such wage-hour and farm bills as may be enacted promise to be monstrosities. Prospect of really effective tax revision is not too hopeful.

That is a black picture—but not an inaccurate one, we believe. There is only one ray of hope: Industry, by taking the bit in its teeth, can save the situation. Those in high places of Government are plain scared by the present business outlook; that accounts for some of the panicky actions of the last month. Industry can assert its needs and the needs of the country, and go a long way toward getting them realized. No time is to be lost however.

The Industry Speaks

TEXTILE MANUFACTURERS are often referred to as inarticulate. Although that comment probably still holds true for the industry as a whole, more and more men show willingness to stick their necks out.

During the last month, for example, several expressed themselves in no uncertain terms . . . . . Wm. D. Anderson, president of Bibb Mfg. Co., has sent out a series of forceful letters outlining his views on national problems and urging others in the trade to give expression to theirs through letters to legislators in Washington . . . . . Russell H. Leonard, president of Pepperell Mfg. Co., Ralph E. Loper, of Ralph E. Loper & Co., and George D. Flynn, Jr., liquidating agent of Amoskeag Industries, Inc., all fired broadsides against the third shift and urged its elimination as a step toward textile stability . . . . . B. B. Gossett, president of Chadwick-Hoskins Co., in a powerful address at Charlotte, N. C., also attacked the third shift, calling it "Public Enemy No. 1." Referring to the national situation, he urged his hearers to "bestir themselves, talk with their neighbors, write their representatives in Congress . . . . . Dr. T. C. Murchison, president of the Cotton-Textile Institute, stated the industry's voluntary wage and hour standards "constitute an irrevocable moral commitment which will not be broken in the year that lies ahead if at this time there is a reaffirmation of faith and purpose."

It is through assertions of leadership and direction such as the above that the industry can move on to higher ground.

NEWS OF THE MONTH

Demand Grows For End of Third Shift

From various quarters of the industry, during the recent month, have come insistent warnings that elimination of the third shift is necessary for stabilization in textile manufacture.

Russell E. Leonard, president of Pepperell Mfg. Co., in a letter to Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, condemned the third shift as an "economic monstrosity" and stated that unless that shift is eliminated, "10,000,000 more cotton spindles will be junked in another decade of textile depression." Ralph E. Loper, of Ralph E. Loper & Co., of Fall River, Mass. and Greenville, S. C., speaking before the Textile Square Club in New York, said that if the third shift were cut out and most of the spindles in place today run on two shifts, the market would be in fairly good balance. George D. Flynn, Jr., liquidating agent for Amoskeag Industries, Inc., stated in an interview that prompt elimination of the third shift is the only means of saving the textile industry during the present recession, should it continue much longer.

Pros and Cons on Wool Top Futures

There have developed in the wool and wool goods fields two opposed schools of thought on the Wool Top Futures Exchange. The group of antis brought pressure to bear late in November on the Senate Committee which is investigating wool trading, urging that committee to consider suspension of trading on the futures market. As result of this move, a hearing was held in Washington on Dec. 7 at which F. R. Marshall, secretary of National Wool Growers Association, C. J. Fawcett of the National Wool Marketing Corp., and Austin Levy, treasurer of Stillwater Worsted Mills were heard in opposition to the exchange by Senator Adams' committee. On Dec. 10 the supporters were heard.

Senator Adams revealed that his committee had a bill, soon to be introduced, to place wool tops futures market under regulation of the Commodities Exchange Commission, but which could not readily be voted upon before the end of January. He also indicated that his committee's report would be completed around Jan. 15, which report will embody recommendations on regulation of wool markets. It was not believed that Congress would sanction a complete suspension of the wool top exchange.

Japan Boycott Movement Gains

The movement to boycott Japanese goods, especially silk and silk products, strengthened appreciably during December, and there were indications that it might considerably curtail consumer demand for silk hosiery. The boycott committee of the American Friends of the Chinese People held meetings in various cities, and its activity included an anti-silk stocking parade in New York. The boycott leaders urged women to wear lisle instead of silk hosiery and two early results of this effort were that retailers reported increased call for lisle hosiery while some foremost hosiery firms which had ceased making this line 25 years ago announced that they had resumed manufacture of lisles.

Record Volume In World Cotton

World consumption of cotton in the 1936-37 cotton season reached the all-time high record of 30,991,000 bales, according to a review in the tenth Cotton Year Book of the New York Cotton Exchange, just issued. The previous high record, established in the season immediate preceding, was 27,708,000 bales.

World production of cotton during the 1936-37 season reached the record total of 30,700,000 bales, according to the Year Book. This total consisted of 12,375,000 bales produced in the United States and 18,325,000 produced in foreign countries. Thus, the United States contributed 40% and foreign countries 60% to the world total. These percentages are the reverse of those for the world crops in the later 20s.

U.S. Cotton Crop Also Sets Record

The U. S. Crop Reporting Board, in its final estimate of the year issued Dec. 8 on conditions as of Dec. 1, indicated an all-time record American cotton crop of 18,746,000. The previous record was 17,978,000 bales in 1926. Indicated yield per acre also set a record at 264.6 lb., comparing with 197.6 in 1936 and 169.9 for the 10-year (1923-32) average.

Fear Staple Cotton Shortage

In spite of an 18,500,000-bale cotton crop for 1937, spinners of combed yarns face the possibility of a shortage of good grade staple cotton before the end of the year, according to R. D. Hall, president of the Southern Combed Yarn Spinners Association, Gastonia, N. C. An analysis of the Government figures reveals the startling fact that this year's crop of white strict middling 1-1/16" or longer will be considerably less than last year. While this year's estimated total cotton crop shows an increase of 54% over last year's actual crop, at the same time this year's estimate of white strict middling 1-1/16" or longer shows 26% less than last year's actual crop of this quality. In other words the actual crop of the latter last year amounted to 681,000 bales, while this year's estimate indicates a total not to exceed 500,000 bales.

Shrinkage Standards for Wool Goods

At a conference on the shrinkage of woolen and worsted fabrics, held Dec. 17, in New York, under the auspices of the Division of Trade Standards, U. S. Bureau of Standards, the following terms were tentatively approved. The term "mill shrunk" shall be applied only to those fabrics which have been subjected to a preshrinking process in the mill. The term "Texturized" or any similar registered trademarked term shall be applied only to those fabrics which have been subjected to the preshrinking process licensed under the trademarked term referred to. The term "London shrunk" shall be applied only to those fabrics which have been thoroughly saturated in water and subsequently dried in the air without the aid of heat, and refinished either by subjecting to hydraulic pressure or by passing over a heated cylinder. The terms "shrinkproof," "non-shrinkable," "fully shrunk," or similar terms shall be applied only to those fabrics which disclose absolutely no shrinkage when subjected to a standard test. These standards, which were sponsored by

the Texturity Guild and the National Textile Refinishers Association, will be sent to the industry for confirmation.

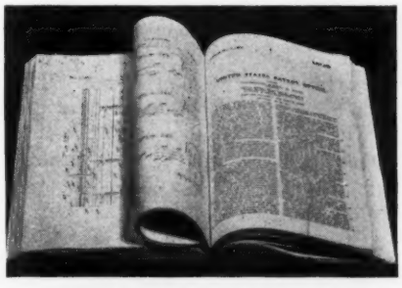
Silk Identification Rules Drafted

The Federal Trade Commission this month took under consideration a draft of silk identification rules which had been submitted to the Commission by the National Federation of Textiles, Inc., representing the chief firms weaving silk fabrics. Irene L. Blunt, secretary of the Federation, explained that the rules had been prepared at the request of the commission, following promulgation of the rayon rules on Oct. 25. She said the silk rules were developed as a corollary to the rayon rules.

It is understood that the FTC will shortly call a trade practice conference at which the proposed silk rules will be formally laid before the industry for action.

Chemical Show

Many of the exhibits at the Sixteenth Exposition of the Chemical Industries, held Dec. 6 to 11 in Grand Central Palace, New York, proved to be of particular interest to textile men. Among the new textile chemicals shown were included several cellulose derivatives used in finishing, a water repellent, a number of wetting agents and detergents, printing lacquers, pentrants, and dyes. In addition to new types of laboratory equipment, there were shown improved types of textile dryers, extractors, a variety of corrosion-resistant materials for use in construction of dyeing and finishing machinery, and many new control instruments. Textile fabrics displayed included those made from rayon staple, Cordura, and spun glass of both the continuous filament and staple fiber types.



Most Voluminous Patent—Covering 316 pages and comprising 346 illustrations and 250 claims, U. S. Patent 2,101,048, (shown above) issued Dec. 7, to Alfred E. Ischinger and assigned to Textile Machine Works, is the most voluminous ever issued by the United States Patent Office. The invention patented is a machine to permit the uninterrupted knitting of full-fashioned hosiery. Listed in the patent specifications is a sequence of 1,534 operations performed on a combined legger and footer. These operations include continuous operation of the machine through the knitting and turning of the welts; forming of the leg portion, including narrowing; reinforcing the heel cap; narrowing and reinforcing in the sole and toe portions; and knitting the instep portion. Officials of Textile Machine Works, when interviewed by a representative of* TEXTILE WORLD, *stated that no plans have been made as yet for commercial production of a machine of the type described in the patent.

"The Bride Steps Out"—This model was the highlight in a glamorous collection presented to the fashion press and retail executives, at the Cotton-Textile Institute's showing of All-American cottons at a New York hotel on Dec. 15.

European Textile Tour Planned

Dr. E. W. K. Schwarz, technical director of the Arkansas Co., New York, in collaboration with the Hamburg American Line-North German Lloyd, is planning to take a group of American textile men on a tour of European textile centers next month. The tour is scheduled to sail from New York on Feb. 26. This arrangement will enable the group to reach the Leipzig Trade Fair in time for a four-day visit there.

The tour will also embrace the more important textile centers of Germany, Italy and Switzerland where special arrangements have been made for the group to see the step by step evolution of new fabrics and to witness the newest production methods and textile machinery.

Several important textile institutions and laboratories are also included, as well as a two-day stay in Paris. The tour will be of seven weeks duration and the party is due to arrive back in New York by April 15.

The rate for the tour, including transportation in cabin class, is $865, and in tourist class, $680.

Seek Trade Rules For Rayon Fabrics

As the first step toward enactment of a code of fair trade practices for the rayon woven fabric industry, a group of executives of leading firms have called a meeting of rayon fabric manufacturers in New York Jan. 12. The meeting has been called by a joint committee of converters and manufacturers including Wm. Klopman, Burlington Mills Corp., Otis Stanton, Hathaway Mfg. Co., Jacques Weber, Bloomsburg Silk Mill Co., Lyman Frieze, Duplan Silk Corp. and others. A statement, explaining the aims of the meeting, said it would help to crystallize opinion on the need for removing "irregularities" which now hinder the progress of the fabric industry. Among the problems to be considered are overproduction, credit checking, and lack of respect for contracts. With the letter calling the meeting was enclosed a copy of the converters' fair trade rules enacted last May, which code it was suggested the weavers might follow in developing their own rules.

Markets Improve

Santa Claus did not forget the needy cotton gray-goods market with the approach of Christmas, although it cannot be said that he turned his bag of presents inside out. After a slow opening, a conservative expansion of business was noted—brought on by a number of factors, most important of which was an announced 40% curtailment program of print-cloth mills. Before the holiday arrived, there were signs of investment buying, indicating that bottom had been reached in some lines. As the month closed, the situation, while greatly improved, was still considered vulnerable and entirely dependent on

production behavior of the mills. Shipments of cotton yarn improved during December, but buying for the most part was below the November average. Some observers think that a spring movement of consequence may take place due to the delayed fall operations.

Carded Yarn Group Meets

Third-shift operation of productive machinery was branded as Public Enemy No. 1 of the carded-yarn spinning industry by B. B. Gossett, president of Gosset Mills and Chadwick-Hoskins Co., Charlotte, N. C., in an address last month before the Carded Yarn Group of the Cotton-Textile Institute. Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, also on the program, predicted an early recovery in textiles. Principal business discussed was the proposed uniform sales contract for spinners. W. N. Grant, president of Grantville (Ga.) Mills was elected chairman, succeeding Don P. Johnston, of Wake Forest, N. C.

Government Finds Textile Pay Up

The textile industry has "kept well in advance of most other important production industries in wages and hours," Labor Department officials were reported to have admitted recently in Washington.

Cuban Tariff Situation

Textile Fabrics Association recently went on record as opposing efforts of a group of American merchants to break down the preferential tariff arrangements on American textiles, particularly rayon.

Curtailment Helps Wool Goods

Woolens and worsteds were quiet through December with the future brightening as evidence of drastic mill curtailment in scant and poorly assorted stocks became more evident to buyers. Men's wear staples were slow but some orders for semi-staples for February were coming in. Women's wear woolens were fair with interest also in mannish suitings. String beige is a leading color for spring. It was expected that mackinaw cloths would soon open for 1938 at 10 to 15% reduction from a year ago. Wool tops moved away from the low of 78½c. for N. Y. spots, set late in November until they reached 89c. on Dec. 10. On Dec. 24, the figure was 87½c. The raw wool market in Boston was firmer, with more inquiry reported.

Carpets and Rugs Reduced

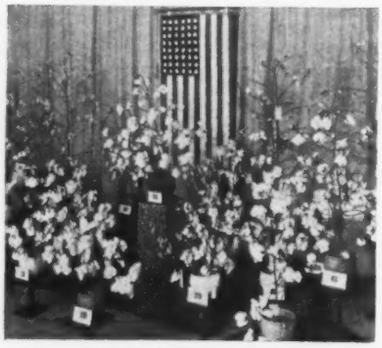
December was an eventful month in the carpet industry. Prices were cut 6 to 8% by the larger manufacturers during the second week of the month and although there was no immediate increase in business, there was feeling that the spring situation had been stabilized by this action and the hurtful effect of "inside" prices avoided. East Indian carpet wools in Liverpool slumped 20% but recovered 10% by mid-month. South American wools advanced, while China's were nominal because no new shipments were being made.

Industrial Enters Staple Field

Plans for construction of a 15,000,000 lb. plant to make cut staple fiber, marking the debut of the company in the field, were announced by Industrial Rayon Corp. in Cleveland, Dec. 17. The plant will be an addition to the Painesville, O., plant where the company is soon to start commercial scale manufacture of continuous filament rayon by its new process.

Raw Silk Off 5c

Generally light demand from weavers and knitters brought further weakening of raw silk prices during the last month. Crack double extra, 13-15 white 78% which had closed at



Various types and varieties of cotton which go into the manufacture of cotton textiles are shown in exhibit of plants on display this month at Southeastern Cottons, Inc., offices, 58 Worth St., New York. Display comprises 31 different specimens of cotton grown in the South, Southeast and Southwest, contributed with technical description by authorities in the various States.

$1.59 Nov. 23 fell to $1.54 at closing Dec. 23. Market tone was hesitant, due mainly to the curtailed production by consuming industries. The anti-Japanese boycott caused considerable uncertainty among buyers and contributed to accentuate the lull.

Prices of Finer Rayon Yarns Cut

Prices of fine denier viscose yarns were reduced 6 to 11c and 125 denier were cut 3c, by the American Viscose Corp. on Dec. 20; this action precipitated an industry-wide reduction by most competing companies within these denier ranges. The price of 150 denier, 40 filament, which is the major unit in sales volume, remained unchanged at 63c. At the same time the American Viscose company announced a 60-day guarantee against future cuts on either viscose or acetate yarns. The downward revision followed weeks of speculation and discussion; producers had debated the alternative of drastically cutting output or cutting prices. It is understood now that production schedules will remain at their present high point, pending market reaction to the price cut.

Rayon Fabrics Firmer

A steadying of price tone was reported in the rayon woven goods market at the end of the year as the first reaction to the yarn price cut. The yarn revision by ending widespread speculation, made for healthier feeling among weavers, and pointed toward improved market conditions in the post-holiday period.

Silk Jerseys Favored

Jerseys, heavy satins and crepes were the chief all-silk fabrics at the Paris openings, according to the International Silk Guild which listed the runners-up as chiffon, organdie, tulle, net and etamine. Virtually all the major Paris houses highlighted silk jerseys in their showings for spring 1938.

Active Knit Goods Call

Despite the various problems facing the market, including the anti-Japan boycott and the identification problem, the three knit goods divisions enjoyed active call through December. A notable feature of holiday hosiery volume was the increased retail demand for higher-priced merchandise; December sales in the range between

69c and $1.00 were well above the same month last year, stores reported. Underwear coverage was good, both in current heavyweights and in spring lines; the policy of strict restraint on production continued and it was reported that some of the mills selling to wholesalers were operating during November at about 35% of capacity. The feature of the outerwear end was the early interest shown in the 1938 swim suits; mills were receiving unusually numerous inquiries, pointing to good reception for the openings this month.

"Swim For Health Week" Plans

Getting off to an earlier start than in 1937, the National Knitted Outerwear Association announced last month, following a New York meeting, that plans for the "Swim For Health Week," June 20-25, 1938, were well under way.

Many Mills Turn To Lisle Hosiery

A decided increase in the use of lisle yarn for hosiery manufacture was reported in the market this month. It was estimated that 40 to 50 mills ordinarily making silk full-fashioned hosiery were experimenting with lisle and between five and 10 were making deliveries of lisle hosiery in appreciable quantities. At the same time, Dean Hill, managing director of the Durene Association of America, announced the development of a mesh

This mesh, full-fashioned stocking, of 90s-2 mercerized cotton yarn, made on a 45-gauge silk full-fashioned machine, is finding an active market for wear with sports apparel and tweeds. (Courtesy Durene Assn. of America)

stocking, made on a 45 gage silk full-fashioned machine, from 90s two ply mercerized cotton yarn; this number is already on the market and retails at $1.00.

Mr. Hill stated that the mesh stocking, developed mainly for sports and street wear, was the result of experimental work begun nearly a year ago. Yarn manufacturers, he said, have long felt that lisle had wider possibilities in hosiery. Mr. Hill added that the new lisle hosiery was not offered in competition with silk for formal or semi-formal wear, and that it had "nothing whatever to do with the boycott against Japanese goods."

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Cotton Week Set

National Cotton Week has been set by the Cotton-Textile Institute for observance from May 30 to June 4.

Underwear Institute Starts Wage Survey

The Underwear Institute announced last month that it was starting an industry-wide survey to bring out facts showing the exact position of the industry on wages. The study will include averages, maximums and minimums in all fibers, and also will cover ratio of time workers to piece workers, etc. Resulting data will supply mills with basis of comparison of wages and the study will be made a periodical service of the Institute, it was stated.

Conference Asked By Hosiery Leaders

The National Association of Hosiery Manufacturers last month asked that the Federal Trade Commission hold a conference of the hosiery industry leaders to evolve a complete set of rules governing marking of merchandise. It was indicated that the conference would be held during the current month.

New "Lab" for Lowell

Plans have been completed for the construction of a 3-story chemical laboratory addition at the Lowell, Mass., Textile School, to be erected during 1938 for research and teaching service. The space for this purpose will be practically doubled. The estimated cost exclusive of equipment will be about $150,000.

TEXTILE WORLD ANALYST

TEXTILE WORLD'S index of textile mill activity for November 1937 reflected dramatically the sharp change in textile fortunes which occurred in the fall. The rate for that month was 32% below November 1936, and 13% below a "normal" November (1924-31 average). Our index that month was the lowest since September 1934 when the industry was at the bottom of the reaction which followed the speculative boom in the early NRA days.

Despite this dismal comparison, the activity for the first 11 months of 1937 was 6% above 1936 and 25% above the corresponding period of a "normal" year. Since December production was sharply below that of a year ago, final statistics should show the total for 1937 approximately the same as 1936, and therefore about 25% above a "normal" year. The increased activity in 1937 as against 1936 was due entirely to the cotton series, which was up 9% for the first 11 months. In that period, wool, silk and rayon were down 6%, 2% and 9% respectively.

Textile production last year was still well above general industrial production —but whereas the latter gained about 5% over the previous year, the textile rate remained approximately the same.

The prolonged decline in carded fabric margins was arrested in December and series turned upward, due of course to the spurt in sales. (Table I.) Carded yarn margins, however, continued their merry descent. (Table II.)

Most of TEXTILE WORLD's price index numbers declined again in December. In the cotton series, yarns and cloths were off despite firming in raw material. In the wool group, all declined except the cloth. Raw silk eased. Although price reductions were made in the finer numbers of rayon, our index number is unchanged as it is based on 150 denier (40 filament) which was not revised.

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Figures on cotton manufactures, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

	Cotton Index Numbers				Wool Index Numbers				Silk Index	Rayon
Date	Cotton	Yarns	Gray	Colored	Wool	Tops	Yarns	Cloth	Raw-Silk	Index
1923-25	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
1930 ave.	50	61	61	72	58	61	72	90	109	46
1931 ave.	32	68	46	59	46	49	59	71	32	32
1932 ave.	24	37	37	60	36	40	52	57	21	28
1933 ave.	39	56	55	50	53	59	62	80	21	26
1934 ave.	61	67	70	62	63	70	75	91	17	25
1935 ave.	60	68	67	69	56	58	70	88	22	24
1936 ave.	45	68	63	68	72	78	76	93	23	25
Jan. 1936	48	67	63	68	67	73	75	93	26	24
Feb. 1936	42	62	58	67	72	81	77	93	24	24
Mar. 1936	42	61	57	66	73	81	77	93	23	24
Apr. 1936	43	60	55	64	68	75	76	90	22	24
May 1936	43	57	54	64	67	75	76	90	21	24
June 1936	44	58	57	65	67	75	76	90	20	25
July 1936	48	61	61	70	69	75	75	90	22	26
Aug. 1936	45	62	63	70	70	75	74	90	23	26
Sept. 1936	45	62	63	70	70	75	74	90	22	26
Oct. 1936	45	64	67	71	71	75	74	92	23	26
Nov. 1936	45	65	74	72	78	82	76	100	26	26
Dec. 1936	48	72	80	74	87	90	84	105	26	26
Jan. 1937	48	73	81	76	90	93	88	108	27	26
Feb. 1937	48	74	78	76	90	92	90	108	27	26
Mar. 1937	53	78	80	78	87	88	90	112	27	26
Apr. 1937	53	80	82	80	84	86	90	112	27	27
May 1937	49	75	76	78	82	84	89	112	24	27
June 1937	47	70	71	78	78	82	88	112	25	27
July 1937	45	65	67	78	78	82	88	112	26	27
Aug. 1937	37	59	62	78	80	82	88	112	25	27
Sept. 1937	33	54	56	73	78	81	87	107	25	27
Oct. 1937	31	51	53	67	73	76	82	100	23	27
Nov. 1937	29	48	50	61	66	68	74	97	22	27
Dec. 1937	30	47	49	60	60	64	70	97	21	27

Key wool prices with usual comparisons follow:

	Jan. 3, 1938	Dec. 1, 1937	Jan. 4, 1937	Jan. 2, 1936
Fine and fine med. territory	$0.70	$0.77*	$1.06	$0.78
Ohio ⅓s	.32	.35	.51	38½
Tops fine 64-66s	.96	.96	1.35	1.04
Average ⅓s	.78	.80	1.15	.91
High ⅓	.73	.75	1.10	.84
Noils, fine	.60	.60	.83	.66½
⅓	.48	.48	.65	.51
2-40s 60s wstd yarn	1.45	1.50	1.85	1.49
2-32s 56s wstd yarn	1.22½	1.30	.....	.....
8020 serge	2.00	2.00	2.15	1.90

* Through typographical error the Dec. 1 price of fine and fine medium territory was given in last issue as 97c.

Current statistics on wool consumption and mill activity:

	November	October
Wool consumed, clean equiv.	(4 weeks)	(5 weeks)
Apparel wool, lb	10,604,000	16,595,000
Carpet wool, lb	2,728,000	4,925,000
Machinery activity (40-hr. shift)		
Looms (50-in. and wider)	56.1%	68.6%
Carpet looms	35.7%	52.5%
Combs	62.0%	74.6%
Worsted spindles	47.6%	57.6%
Woolen spindles	55.3%	80.6%

Key rayon prices and statistics follow:

Prices	Jan. 3, 1938	Dec. 1, 1937	Jan. 2, 1937	Jan. 2, 1936
Viscose process				
75 denier (18-30 fils.)	$0.83	$0.93	$0.90	$0.90
100 denier (40 fils.)	.76	.82	.79	.79
150 denier (40 fils.)	.63	.63	.60	.57
Acetate process				
150 denier	.63	.63	.60	.60
Cupra. process				
150 denier (112 fils.)	.68	.68	.65	.65
Rayon staple 1½, 3, and 5½ denier viscose	.25	.25	*	*

Indices of Deliveries*

Month	Dec.	Nov.	Oct.
In year 1937	242	252	366
In year 1936	713	714	669

* Rayon Organon. Covers 100% data for all processes 1923 to date. Note that acetate is now included. Shipments index for all rayon 1923-1925 = 100.

Key silk prices and statistics follow:

Prices	Jan. 3, 1938	Dec. 1, 1937	Jan. 2, 1937	Jan. 2, 1936
Crack XX13/15wh.78%	$1.55	$1.58½	$1.99½	$1.97
Tram, 5thd Japan 85%	2.29	2.31	2.85	2.76
Tram Crack XX 78%	2.17	2.18	2.61	2.63
60s-2, spun silk	3.15	3.15	3.05	2.95

Statistics	Imports	Approximate deliveries	Stocks at warehouses
December, 1937	26,093	21,982	49,535
November, 1937	36,339	31,749	45,424
October, 1937	32,879	36,002	40,834

Fabric and yarn manufacturing margins follow:

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933	21.4	April, 1936	14.3
October, 1933	19.1	May, 1936	14.3
January, 1934	18.4	June, 1936	15.3
April, 1934	17.6	July, 1936	16.9
July, 1934	15.5	August, 1936	18.0
August, 1934	16.6	September, 1936	18.4
September, 1934	18.6	October, 1936	21.2
October, 1934	17.4	November, 1936	25.4
November, 1934	15.8	December, 1936	28.1
December, 1934	16.2	January, 1937	28.6
January, 1935	16.2	February, 1937	26.2
February, 1935	16.0	March, 1937	25.6
March, 1935	15.9	May, 1937	23.1
April, 1935	16.1	June, 1937	21.2
May, 1935	16.0	July, 1937	20.1
June, 1935	16.5	August, 1937	19.4
July, 1935	15.2	September, 1937	18.1
August, 1935	17.1	October, 1937	17.3
September, 1935	17.9	November, 1937	16.9
October, 1935	17.7	December, 1937	15.7
November, 1935	16.4	Dec. 1	15.7
December, 1935	16.2	Dec. 8	15.1
January, 1936	17.2	Dec. 15	15.6
February, 1936	16.5	Dec. 22	15.8
March, 1936	15.5	Dec. 29	16.1

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933	23.5	May, 1936	14.8
October, 1933	20.0	June, 1936	14.6
January, 1934	18.3	July, 1936	15.0
April, 1934	15.9	August, 1936	16.5
July, 1934	14.6	September, 1936	16.5
August, 1934	15.3	October, 1936	17.2
September, 1934	15.6	November, 1936	18.0
October, 1934	14.6	December, 1936	20.6
November, 1934	13.3	January, 1937	20.8
December, 1934	13.5	February, 1937	21.2
January, 1935	13.5	March, 1937	21.3
February, 1935	13.9	April, 1937	22.6
March, 1935	14.4	May, 1937	21.2
April, 1935	14.1	June, 1937	19.3
May, 1935	13.8	July, 1937	17.8
June, 1935	14.5	August, 1937	17.2
July, 1935	14.3	September, 1937	16.1
August, 1935	15.3	October, 1937	15.3
September, 1935	15.4	November, 1937	14.7
October, 1935	15.8	December, 1937	13.7
November, 1935	16.3	Dec. 1	14.3
December, 1935	16.3	Dec. 8	14.2
January, 1936	18.4	Dec. 15	13.4
February, 1936	17.5	Dec. 22	13.2
March, 1936	16.3	Dec. 29	13.4
April, 1936	15.6		

Key cotton prices with usual comparisons follow:

	Jan. 3, 1938	Dec. 1, 1937	Jan. 4, 1937	Jan. 2, 1936
Spot Cotton, N. Y.	8.38	8.00	12.91	12.20
High previous month	8.51	8.22	13.11	12.35
Low previous month	7.97	7.79	11.56	11.65
10s hosiery cones	18	18½	29	29½
10s/2 carded skeins	18	18½	29½	29
20s/ carded warps	21½	21	34½	32
60s/2 combed warps	48	48½	62	59
60s/2 mercerized cones	63	63	75	72
37 in., 3-yd. drill	6¾	7	9½	9½
38½-in. 64 x 60s	4½	3¾	7⅞	6¼
36-in. 4-yd. 56 x 60s	5¾	5½	8½	8½
Denim, 2.20s	11½	12	15	15½

Statistics of particular interest to cotton manufacturers showing November operation and the raw material situation:

	Nov.	Oct.
Spindle activity (% capacity)	105.2	111.1
Spindle activity (millions of hours)	6,482	6,928
Cotton consumed (bales)	484,819	536,424
Cotton exported (bales)	796,985	798,921
Cotton imported (bales)	9,115	8,743

THE OVERSEERS' CORNER

Mechanical "Stretch-Out"

necessary to progress—only human stretch-out is harmful

By A. J. L. MORITZ

WE HEAR currently much about the so-called "stretch-out" system as applied to all kinds of industries. This word has been used, or rather misused, in numerous cases as a lever to force workers into strikes and to promote discord and discontent. What really is "stretch-out"?

In general the definition would be that stretch-out is something that occurs when a worker is required to deliver during a certain working time more units of work than he has produced before. If this definition is accepted, then it necessarily follows that we have to distinguish between two types of stretch-out.

The first type, which could be termed the mechanical, occurs when by simplifying working methods and by improving or modernizing machinery, mechanical equipment, tools, etc., a situation is created whereby the worker is enabled to produce more units of work with the same, or even less, effort than under the old conditions.

The second type, which could be termed the human (in some cases open to serious criticism), occurs when without change in working methods the worker is required to put forth more effort than previously and thus produce more units of work.

This second kind of stretch-out, entirely based on inducing workers to apply greater personal effort, may in some cases become unfair and even dangerous to the workers. Up to a certain point it is perfectly proper to ask a worker to give an honest day's work for his wages and to utilize all of his working time for production and to the best advantage of his employer. But the difficulty lies in judging exactly when this "certain point" is reached. In other words, where is the border line that lies between a "good day's work" and an "inhuman load"?

In deciding upon questions of this kind the employer must be guided by careful time studies, made by experienced men, which allow for necessary rest periods and differentiate between the various kinds of work. No definite formula can be used universally for this purpose. Further, it would seem advisable in cases of uncertainty to let the worker have the benefit of the doubt.

Any fair-minded person will agree, however, that the first—the mechanical type of stretch-out—is not only within the good right of the employer, but really constitutes his solemn duty towards both his stockholders and his workers. If he is not constantly on the alert to improve production methods or if he is satisfied in letting a great portion of his workers' efforts go to waste, then in the end he will not be able to compete with others in the same industry, and the ultimate result will be the closing of his business and unemployment for the workers.

For the workers it is much more pleasant to work with good equipment according to well thought-out methods than to just waste time haphazardly. For example, if a man is employed to carry 1,000 bricks from one pile to another and is told to carry only one brick at a time, it would take quite some time for the first pile to be removed to the desired place. He would have to walk 1,000 times back and forth. If for a second pile he is given a wheelbarrow designed to hold 20 bricks, he would only walk the distance 50 times, and, of course, do the job much more quickly and pleasantly. If for a third pile he is provided with a truck, he could stack all the bricks in one load and drive to the place of unloading in a few minutes without the physical fatigue of continually walking and carrying the bricks by hand. This, now, is stretch-out of the legitimate kind, and no person could reasonably object to such a procedure.

Some so-called "benefactors" of mankind say that when improved procedure reduces time of operation fewer workers are required to do a certain job, and others therefore lose their jobs and become unemployed. Anyone who has given some little thought to questions of this kind (and I must include in this category all of the above mentioned benefactors) will at once see that this way of reasoning is utterly false. How many men would now be working, for instance, in the automobile industry if the same methods employed by Mr. Ford in making his first experiment were still in use? How many persons would be able to own one of his cars made under such conditions and costing approximately $30,000 each for the most simple model?

Logical thinking should make it quite clear that the only reason so many millions of people at present find work in industry is the fact that throughout the years a continuous legitimate improvement in production methods has been going forward. To criticize such industrial developments and to depreciate their value with a maliciously misapplied word like stretch-out is nothing less than stupidity.

For the obvious reasons cited all workers in all industries should cooperate with their employers in an effort to constantly improve methods and processes instead of fighting these improvements. This cooperation is necessary, not only to safeguard the productive future of the plant in which the worker is employed, but in general for the advancement of our civilization towards a higher standard of living. It is the only sound way to reduce unemployment to an absolute minimum.

Uncle John's Version of the CIO

Editor, Overseers' Corner:

While I realize your journal doesn't go in for poetry as a general thing, for the sake of variety I thought possibly a bit of philosophy written in rhyme, in ancient North Carolina dialect, would be amusing and at the same time contain a thought. "Uncle John's Version of C.I.O." was com-

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CONTRIBUTIONS ***to "The Overseers' Corner" are paid for without regard to length. We will use letters discussing the narrative on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.***

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posed by myself for the *Overseers' Corner*. It expresses the sentiment of most of the older textile workers in this community, and is just the way they would say it if they should go poetic.

"I haint got much faith in that-there C.I.O.
Ner what they say they're goin' t'do.
They're crazy, er jist puttin' on a show
And maybe, they're hippercrits too.
They can talk t'Bill, er talk t'Bob
I haint settin' down on no job."

"I'm fer th' man that's still in th' race
And leavin' th' gripers behind;
That always meets trouble, with cam an' grace
An' never fergits t'be kind.
Let 'em tell us he'll steal an' he'll rob;
I'm fer th' man that gi'me my job.

—I. C. MOORE,
North Carolina.

I Live in a Southern Mill Village

By JAMES W. NABORS

This is one of many unsolicited letters we have received from mill workers since *Colliers* published its now famous (or infamous) article by Davenport on southern mill life. All of them could not be published due to lack of space, so we selected this one as being representative and informative.

MR. WOOLF, editor of *Textile World*, has already awarded Mr. Davenport the yellow derby for his article "All Work and No Pay." We should also like to award him a prize for that rare bit of literature—in fact, two prizes. If he will come around, we would be glad to present him with a celluloid fire poker for his stylistic writing and a Chinese cut-glass cuspidor for the snuff-dipping stooges of his who gave birth to such inaccurate facts as published. Everyone who has been associated with a cotton mill for the last ten years knows the truth; this is being written for the benefit of those who are not acquainted and who have been misled by some meddler.

Our southern cotton mills are now paying wages in excess of the defunct N.R.A. code wages and for the same number of hours prescribed by the code. This is not hearsay, as I was born between two cotton mills and have never lived out of the shadow of one in my entire life. From playing, living, and working in and around the mills with mill people for 40 years, I presume I should be able to state true facts.

Our houses, it is true, are mostly wooden frame cottages, but the mill has a crew of workers that keeps them painted and repaired. And if you think the people live by the diet Mr. Davenport described, then just drop around to some of the homes at lunch time. You'll find the same fare on their tables that you will most anywhere else. Of course, some tables are simpler than others, but most cotton-mill workers like to eat—and they usually eat what they like.

At the large mills and the more modern smaller mills, you will find the cottages neat and cozy, with electric lights, running water, inside toilets and baths. The newest houses are equipped with electric stoves and hot-water heaters. I know plenty of persons outside of cotton mills who consider that a house so equipped would be a paradise in which to live. They feel this way especially when a comparison is made of the rent we pay with the rent they pay.

Never have we lived or worked where trade was compulsory at the company store. We consider our store a privilege. The clerks are polite and obliging. The variety of goods obtainable is very large, and to use Mr. Davenport's own phrase, "you can buy everything from oats to overcoats." Prices are in line with the independent grocery stores in the same neighborhood.

One other point: Anyone, even a moron, should know how much he spends, whether it be with the company store or elsewhere. The company does not take money that doesn't belong to it. Even if some unscrupulous store manager wanted to profiteer, if I am not mistaken there is a law to prevent racketeering. If the persons Mr. Davenport spoke of in his article are so ignorant concerning such matters, maybe they should appoint him as their legal caretaker. They need one.

Another law in Georgia concerns child labor. There is no child labor here. The law compels children to go to school until they are past fourteen years of age, and the mill owners will not work them until they are past sixteen.

If I still haven't convinced you, there is an open invitation awaiting anyone who wishes to make his own observations. Just come on down to Georgia where people know how much they make, how many hours they work, what they spend their money for, and how much they pay for any item that suits their fancy.

Our mill owners seem to be interested in our social as well as our working conditions and are continually improving both. I am not taking sides with the mill owners. I am just a worker like you and you. But if I think the company for which I work hands me the dirty end of the stick, I can throw the stick back at it. I don't have to hold it. Mill operators don't want dissatisfied workers. They know when a man's heart is in his work he is making better goods and turning out more production. Their understanding of human nature is keen—it must be. The owners provide the conditions you work and live best under for their own good as well as yours.

Maybe we are America's peons, but I know just plenty of persons who would be glad to trade places with us. And there are very few persons I would care to trade with—including certain article writers for national publications.

A.A.T.T. MEETS — The American Association of Textile Technologists held a dinner-meeting Dec. 1, in New York. Harry Levine, president, conducted the meeting, and presented the speaker, M. D. C. Crawford, of* Fairchild Publications. *Mr. Crawford contrasted the anthropologist's view of textiles with that of the technologist; the former goes back 10,000 years in his study of the natural fibers, while the latter restricts himself to modern times. The speaker stated that ancient peoples carried on genuinely creative textile research, while modern technologists confine themselves principally to improving existing products and processes. He argued that what is needed in the textile industry today is a convergence of these viewpoints, since the industry's competition is not within itself but from other more creative industries.

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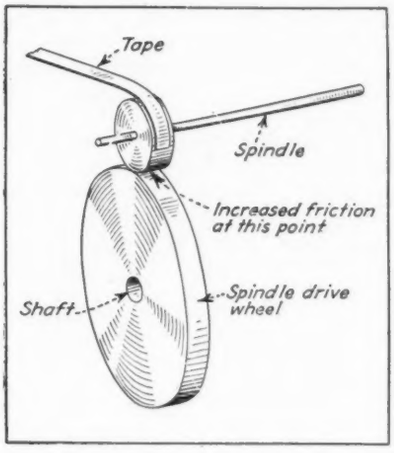
Overseer's Practical Helps

Faulty Winder Spindle

Often loose or poorly wound bobbins are due to a winder spindle which may have collected a small amount of grease or may be too light to pull the



Additional grips can be given winder spindles by applying electrical tape.

skein at the proper speed. In other words, there is insufficient friction to operate the spindle properly. To overcome these slow-moving skeins and give the winder spindle more speed and pulling power, the employee is generally given a piece of chalk to rub against the spindle drive wheel. This chalk cuts the grease, and, in some cases, does an excellent job. However, at times the spindle needs a better gripping method. An ideal fix that will last for months is as follows:

A strip of electrical tape is wound around the spindle, as shown in diagram, and cut off to leave an even surface. Increased pulling power is obvious. Care should also be taken to see that the swift hub pins are the proper length, as the pins must be slightly less than the full width from the inside support of the brackets. A drop of oil inside the pin bearings helps to remedy the drag.

—H. E. WENRICH,
Pennsylvania

Maximum Strength in Warp

Production of cotton warp yarns on ring spinning frames is seriously reduced and expenses are increased through the insertion of more than adequate twist in yarn. Exhaustive and reliable tests have shown that in the case of 20s warp yarn the breaking strength ceases to increase when turns of twist per inch exceed 4.75 × the square root of the count. Turns of twist to give the maximum strength vary with the type of cotton used and with the settings of the carding and spinning machines, but beyond this point there is no increase.

The suggestion is offered that the mill producing large quantities of warp yarn have in its spinning room a comprehensive chart or graph showing breaking strength of a count of yarn at various twist constants. In making such a chart it is advisable to start with twist equal to 2 × the square root of the count and work up to twist equal to 5.5 × square root of count, plotting the breaking strength of yarn for all amounts of twist at and between these two points. Marginal notes should specify the type of cotton used and the machine settings.

The value of this work is that when machines are running in accordance with the results of the tests, they are operating at maximum speed and producing yarn of highest possible breaking strength, with specific twist constants insured. It is necessary to add that the tests must be accurately conducted and that calculations should be checked with actual speeds in a most careful manner.

W. K.
Canada

Consistency in Figuring Standards

In the various calculations necessary in connection with figuring yarn and/or cloth standards, cost, waste, etc., there seems to be a lack of uniformity or coordination that is confusing, especially to a beginner. For instance, one man will figure a standard and carry the results to two decimal places, while another will carry it to three places. Then, if these standards are multiplied by any considerable amount of yardage there may be several pounds difference in the final figures. Some will argue that since in actual practice yarn and cloth will vary considerably from the figured standards that a difference of one decimal place will not make any material difference. But the writer contends that this is all the more reason why the established standards should be as nearly correct as possible.

A mill was producing a yarn that was called 16s, which is, of course, 13,440 yd. to the pound. As a matter of fact the spinning was set up to make 16.5s, which runs 13,860 yd. to the pound. When one considers that this yarn was plied from 5 to 20 times, in various fabrics, this would amount to an error of some importance in an order for one hundred cuts.

This has happened: Specifications for a fabric called for a certain yarn. The spinning room used a slightly different yarn, while the weave room used still another standard for this same yarn. Is it any wonder that there was trouble in getting the weights correct?

In figuring cost and waste the same thing has happened. One person carried his calculations to, say, two decimals; then when the next figure was five or more he added one to his second decimal, or threw away if the figure was less than five. Another person carried the same problem to three places, then "gave or took." It is easy to see why the final results were confusing.

The writer has found that figures in connection with articles are sometimes rather tiresome and are skipped by the reader. Therefore, he will not attempt to cite further examples, but he does wish to make some suggestions. All yarn and cloth standards should be figured by the same rule in all departments, the basis for these figures to be established by the office or by the laboratory. Also all stand-

DESIGNERS AND TECHNICIANS MEET—The second regular meeting of the Textile Designers, Analysts and Technicians Association was held Saturday, Dec. 11 at five o'clock in Smith's Restaurant, Fall River. Frederick Bradbury was chairman, and the speaker of the evening was John Shea of Mount Hope Finishing Co., who told of some of the difficulties encountered in finishing rayons. After the speeches the meeting was opened to questions from the floor. The officers of the association are Edmund Gifford, president; Peter Wayner, vice-president; William Savicki, treasurer; Oliver Bodeau, secretary. Instructive and sociable meetings are held every other month. The next meeting will be held in Fall River on Saturday, Feb. 12, and will be in charge of Leo Chabot and Edward Nelligan.

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ards should be carried to the same number of decimals in each department. Then when a question comes up as to whether or not a department is using the correct standards, do not dismiss the matter lightly for an error of .001 lb. amounts to 1,000 lb., or two bales of cotton, when 1,000,000 lb. are run; therefore it is a factor worth looking into.

HORACE L. PRATT,
Alabama.

Rayon Roving Formula

The following formula, published several months ago in *Traveler*, provides a simple method of figuring how long a creel bobbin will last when spinning rayon:

840 yd. (or 1 Hk.) × Hk. Rov. ÷ 16 (oz. in 1 lb.) = yd. in 1 oz. Yd. in 1 oz. × oz. on full bobbin = yards on bobbin. Yd. per revolution of front roll × revolutions of front roll per min. × 60 = yd. delivered by front roll per hour. Total yd. on creel bobbin × draft ÷ Yd. delivered by front roll per hr. = no. of hr. creel bobbin will last. 1 in. front roll delivers .0873 yd. per rev. ⅞ in. front roll delivers .0763 yd. per rev..

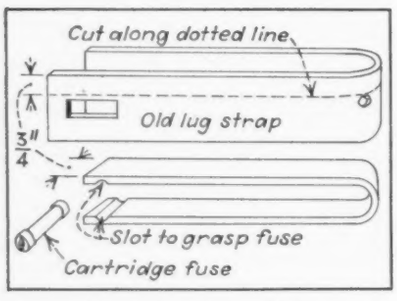
To figure speeder end breakage: 1 ÷ Total number hr. run × 2 = constant. Constant × no. of breaks = end of breakage per hour.

To figure actual draft at fly frames: (Total draft — break draft) break draft = actual draft.

Example: Total draft 7.00, break draft 1.10; 7.00 — 1.10 = 5.90 × 1.10 = 6.49.

Fuse Puller

Quite often when a fuse blows out, mechanics and helpers make use of a pair of pliers in removing and replacing the fuse. It is unnecessary to explain how dangerous this is, although time after time the same method is employed. The handy and quickly made fuse puller illustrated serves the purpose satisfactorily and with complete safety. It is constructed as follows: Take a discarded hickory lug strap and cut off a ¾-in. strip along the dotted lines shown in diagram. File a slot in each end of the strip. To remove fuse with this puller, merely insert the tool into the switch box and press the slotted portions over the damaged fuse. To insert a new fuse, place it in the tool and reverse the procedure. The puller can be used on several sizes of cartridge-type-fuses.



Fuse-puller made from old lug strap.

H. E. W.
Pennsylvania

Weaving Rayon and Wool

On certain warps made from nine cut woolen yarns, with rayon decorations, weavers were not getting over 20% production, due to breaking of the rayon yarns. By making a thorough search for the trouble, I found that the rayon heddles were worn in the eyes. These worn heddles did not harm woolen yarns, but let rayon ends slip down into the worn grooves and break. The rayon on these weaves was drawn on the two back harnesses. In an effort to correct the trouble I first picked out some heddles not worn in the eyes and put them on the heddle frames for the rayon. Drawing-in and pattern-chain drafts were changed, putting rayon on the two front harnesses. When these were put in the looms, I set the stirrups opposite to the way suggested for weak yarns. Stirrups operating rayon harnesses were raised higher on the jacks than the others. This moved the rayon both higher and lower than the wool and buried it in the woolen yarn so that shuttles could not touch the rayon. Result was that rayon warps so treated ran as well as woolen warps.

W. F.
Tennessee

Questions and Answers

Cotton Spinning Problems

Technical Editor:

Following is a list of questions which are troubling us and which we would greatly appreciate your cooperation in answering. For your information, we are running a cotton of about 15/16 in. to 1 in. staple, strict low middling or less, making yarns from 7s to 45⅛s.

1. Once a day we go to a spinning frame—a different one each day—running, let's say, 20s yarn. We take four bobbins from different parts of the frame and test them for yarn number and breaking strength.

a. On these four bobbins, what is the percentage of variation from the standard—20s—which is allowable, consistent with good running?

b. Will this percentage of allowable variation change with the number being run? In other words, if four bobbins taken from a frame of 40s yarn ran 39—39—41—41, this would be a variation of 5%. If the same percentage were applied to number 10s yarn, we would be permitted to run 9.75—9.75—10.25—10.25. To make myself clear, are we permitted to run 9—9—11—11 and still call this good running?

2. How frequently should tests of yarn number and weight be made, per day or per week, and from how many frames should test bobbins be taken on a given yarn number? (8493)

1. We must assume that all frames running on a given yarn number are geared for the same draft, the same twist, and the same lay, with the roll set-up identical, so that with a standard roving, identical numbers of yarns, within the usual practical limits, would naturally result. This being the case, the daily sizing is merely a control on the trend of the yarn weight. Is it static, producing the correct number, or it is tending to run heavy or light? That is all the daily sizing can do. It is, therefore, very unsatisfactory to select four bobbins at random, from a different place every day, and attempt to draw any conclusions from the weight or break.

We should say that, when the frame is started up on a given number, the weight of the yarn should be promptly established by the use of the necessary change gears; and then, at least once a day, sizings from eight spindles—creeled with new full bobbins, always on the same spindles—should be taken to determine the trend of the weights. The control should be in the card room, and the spinner should always be furnished with copies of the carder's weight report. This is the only satisfactory way to handle this matter so as to avoid violent swings and fluctuations, which always result in losses to the mill.

1a. On 20s yarns, in a mill with machinery in good condition and with an organization of moderate, properly-proportioned drafts, the weight of a 120-yd. skein should not vary over two grains. This is equivalent to 4%. Translating this into yarn numbers, the maximum number would be 19.2; the minimum, 20.8.

1b. The percentage of variation will vary with the number being run. By the same reasoning, if running 10s yarn, the limits would be 9.5 on the heavy to 10.5 on the light side. A variation of several tenths weight of the skein in the fine yarn is much more serious than a similar variation in the coarse—the larger

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masses of cotton naturally being more difficult to control.

2. Assuming the mill has adequate equipment to establish and maintain a stabilized atmospheric condition, we should say that once in 24 hr. is sufficient to size for number, unless an inspection of the card-room sizings reveals unevenness and serious fluctuations. Under these conditions, we recommend that at least eight bobbins be sized from several frames, especially those which have been recently creeled.

Flat-Knit Wales Diagonal

Technical Editor:

We would appreciate your help in solving a problem with which we are confronted at this time.

Enclosed you will find a piece of cloth which runs off our links-and-links machine. One side is diagonal and the other is vertical. Can it be the construction of the yarn. (8455)

A close study will show that both sides of this piece have the diagonal tendency, although one side shows it rather more than the other.

Without question, the diagonal inclination of the wales of this piece of fabric is due to the twist in the yarn. If you will draw some of the yarn from the cone and let it hang down in a loop, it will probably twist on itself, indicating that the twist of the yarn is not "balanced." The more the twist is out of balance, the greater is its tendency to distort the loop and the greater will be the diagonal inclination of the fabric.

One of the reasons for using soft-twist or properly balanced ply yarns in knitting is to prevent the spiral effect produced when hard-twist yarns are used.

Warp Streaks In Rayon Taffeta

Technical Editor:

Inclosed is a swatch of a shot taffeta which we are at present weaving. If you will examine it closely, you will notice pronounced warp streaks. We do not believe these are caused either in the warping or the weaving. Our skein dyer advises that the defect is section marks, but we believe it to be uneven dyeing in skein. It would be appreciated if you would examine this material and give us your opinion. Incidentally, this yarn is all the same lot from the dyehouse. (8391)

In order to determine whether or not this defect is due to uneven skein dyeing, the swatch was treated with a stripping agent to remove the dye. After this treatment, the warp streaks were still apparent, showing that they were not caused by improper dyeing.

Further examination of the fabric disclosed a considerable variation in the tension of the warp ends, and it is our opinion that this is the cause of the streaks. As the streaks occur at exactly the same distance apart throughout the fabric, we believe that the fault is in the warping; that is, the streaks appear to be section marks. Certain of the streaks seem to be due to crammed dents.

We suggest, therefore, that you make a thorough check-up in your warping department. Make sure that your warpers are not running with an uneven creel or tight ends. Also inspect the spaces between each section. If you are redrawing the skeins, be careful not to carry too much tension in the redraw.

Black Fibers on Rayon Fabric

Technical Editor:

We are inclosing herewith a piece of rayon material woven with a satin stripe, also of rayon, and three black stripes of acetate. You will note by looking at the cloth that the ground has black fibers.

This material was made on a two-beam job. The satin rayon and acetate were on one warp and the ground on another warp. It appears to the writer that this satin was evidently sized with a rayon size and the acetate did not take the proper size. It appears as though the shuttle pulled the fibers off the acetate and on to the ground when the fabric was woven, and, after the material was dyed, these black fibers show on the ground.

Will you kindly advise us what has caused this? (8473)

The black threads in all cases run fillingwise. From the appearance of the cloth, we believe the acetate black is skein dyed. The loose threads are probably caused by a rough shuttle rubbing on an insufficiently opened shed or else by a shuttle coming in contact with warp threads which have a loose fuzz projecting due to insufficient sizing. This fuzz of acetate fiber is readily loosened on contact and is then caught by the rayon filling thread as it leaves the shuttle. It is not possible to cause this defect in any dyeing or finishing process.

Hose-Selvage Trouble

Technical Editor:

We are inclosing sample sections of stockings knit of four-thread direct knitting silk on 42-gage Hilscher machines. Since we have started to run direct knitting yarn we have had considerable trouble forming a clean inside selvage on our splicings. The inside selvage needle of the splicing seems to lose the cotton loop during the pressing. This takes place on every alternate course, when the carrier is at the opposite selvage, and ordinary machine adjustments give no relief. We find a tuck-stitch effect is caused when knitting stickier silk; in other words, the needle does not cast off the stitch on one course but does both stitches on the next course.

If possible, would you kindly advise what causes this trouble and also recommend some method whereby we might overcome it. (8478)

The most common cause of looping on the inside selvage is rebounding of the splicing carrier. It jumps back just enough so the sinker point, which should pass on the inside or plated-area side of the carrier tube, does not catch the splicing thread to push it down into the throat of the sinker; that is where the splicing thread must be if the last needle is to get under the beard as it goes to press.

Rebounding of the carrier rods may be due either to glazed leathers or a sticky condition of the oil on the rods. Jack grease and castor oil or banana oil in a 50-50 combination have been found to work better than either oil alone, since the friction boxes must slide when the carriers strike the stops. A 10-in. footer head times 52 courses per minute is 520, and dividing by a 14-in. head gives 37 1/7 as the same relative speed for the legger. If the machines exceed this speed, it may be impossible to stop the rebounding when the splicing is plated.

One of the footer swatches and one of the legger which was marked is returned to you in order that you may see where the tuck stitches at the inside edge of the splicing are crossed with washboard knitting. This is more easily seen on the inside of the fabric, and on the footer sample it is plainly marked on both sides of the selvage. The trouble lies in the rocker cams being out of time, and it is a factor in causing tuck stitches.

When the splicing does not knit in at the inside selvage, some knitters put the snapper-springs down so they bear too hard on the splicing thread, and this condition will sometimes cause the peculiar tuck on one needle.

We suggest that you turn the machine by hand across the draw for a few courses and then examine the fabric to determine whether the splicing knits in correctly when the carriers do not rebound.

Woolen-Yarn Problems

Technical Editor:

We are enclosing two sample ropings which we would like to have you criticise for us.

(a) Mix contains 20% cotton, 20% rayon, and 60% pickered worsted rags. 150 grains per 50 yd. to be spun to 10-cut. Does the stock seem to be blended well enough? Should this give any trouble in spinning? Is there any reason for breaking strength of the yarn to be low?

(b) Mix contains 25% cotton, 25% rayon, 40% carded rag stock, and 10% wool. 95 grains per 50 yd. to be spun to 18-cut. Is the stock in this too low to spin to 18-cut? Should we expect to get as much as 80-lb. break (50-yd skein)? Should this give any trouble in spinning?

In weaving woolen yarn, we realize that the two factors, breaking strength

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and elasticity, are of paramount importance. We find that a yarn may have a low breaking strength and fair elasticity, and weave well. Which is more important in weaving? In spinning, do yarns that are elastic run better on the mule?

Is there any relation between breaking strength of yarn and good spinning qualities? We have noticed at times that mixes which run very well on the mule have a low breaking strength in the yarn. What factors affect spinning qualities of a mix? (8442)

The stock of sample *a* seems to be well blended and carded, but the thread content in the rag stock of the blend might tend to give some slight trouble in spinning or affect the breaking strength to a minor degree. The percentages of cotton and rayon in this blend, however, should insure a reasonably good spinning job as well as a fairly strong yarn.

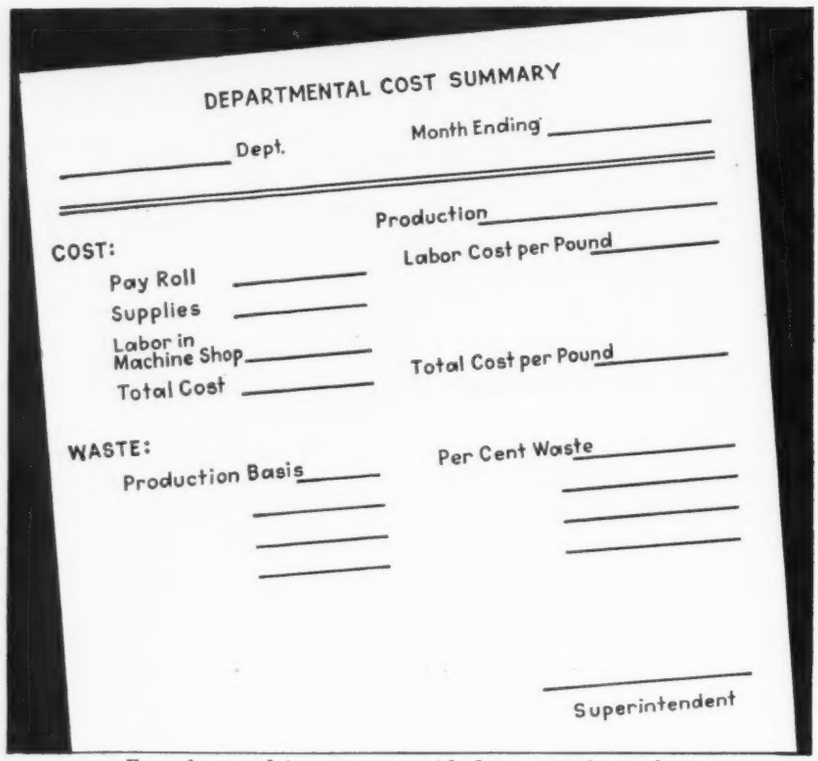
Blend *b* should lend itself particularly well to the spinning of a 5.4-type (18-cut, 3.38-run) yarn, and you should experience no difficulty in obtaining an 80-lb. break for 50 yd. with a sufficient amount of twist. It appears to be an excellent spinning blend.

In warp yarns, elasticity is more important than strength, because a yarn which will give momentarily under the stresses of weaving will be less likely to have its strength tested by the loom. When any yarn, no matter what its strength, is pulled beyond its elastic limit by a power-driven machine, it becomes a broken or at least a damaged yarn.

Yarns with a greater degree of elasticity do not necessarily spin better than yarns of little or no elasticity. Generally speaking, however, the more elastic yarns can be spun at a higher draft.

The relation between the breaking strength of yarn and the inherent spinning qualities of the fibers in the blend differs with the extent of production and draft. For example, it might be well to compare a blend composed largely of Bradford noils with an all-wool blend equivalent to a half-blood wool. Both stocks contain excellent spinning qualities and would spin well, but the production of the former would be somewhat lower than the latter and the breaking strength would be considerably lower.

There are several factors that affect the spinning qualities of a mix; but from the standpoint of stocks used generally in mills today, inadequate blending or mixing and poor carding most seriously affect the spinning qualities.



Form for supplying overseers with departmental cost data.

Departmental Cost Records

Monthly summary offers simple, effective method for presenting cost data

By HORACE L. PRATT

THE OBJECT of this article is to present a simple plan for making available to heads of productive departments accurate cost figures on direct labor, labor in the machine shop and other service departments, supplies used, and waste made. With this information at hand, department heads are able to ascertain just what their departments have been doing, and to map a program of constant improvement. In its present form the article relates specifically to staple goods mills, yet with some amplification it can be made applicable as well to plants producing fancy goods.

Many mills furnish to each department, at various intervals, reports of cost, waste, and supplies. Usually such items are reported separately, coming into the overseers' offices on different days, enabling them to see only part of the picture at a time. Of course, these are better than no reports at all; but, to increase the effectiveness of the data presented, it will be found best to consolidate the reports and present them as a monthly summary.

The accompanying form shown lists only essential figures. It is possible, and often desirable, to enlarge this summary to show itemized reports of supplies for each section, cost for the various productive activities, and figures comparing a given report with previously set-up standards. In some cases, it may be found helpful to make, at the beginning of the fiscal year, a list of standards for each department. If this is done, each overseer can make his own comparisons each month as he receives his summary.

Data required by the form illustrated can if necessary be compiled without the aid of an elaborate cost department. If the mill has such a department, it, of course, should prepare the reports.

Practically every mill requires daily production reports from each department. The supply room and the waste house have to make weekly reports. The payroll is always available for ascertaining direct labor cost. Many machine shops and other service departments are now keeping records showing the amount spent on labor and supplies for the various

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departments. Thus, it will be seen, most of the necessary data are already available.

Under the part of the report covering waste a line is shown for "Production Basis." Some mills base waste figures on the amount of cotton used during a given period. If taken for a period of six months or a year this should give a good average, but to be absolutely accurate it is necessary to add waste made to production of the department. The resulting figure is the production basis. This figure divided into the actual waste made will give the correct waste percentage. Each mill can decide just which basis for figuring waste best suits local conditions.

The several lines included under the waste heading are to make it possible to itemize waste in each department; for instance, card strips, clearer waste, shuttle waste, etc.

Any good clerk can assemble the figures required and prepare the monthly summaries, in addition to other duties. As a matter of fact, preparation of these reports will in most cases simplify, rather than complicate, the work of those charged with keeping cost records.

Split Basket Weave

Further reader-suggestions on prevention of rolling ends

INTEREST IN solution of problems presented by rolling or overlapping ends in split-basket-weave production seems to be at a high point. In January, 1937, TEXTILE WORLD answered a reader's question on the subject, with the suggestion the inquirer use a fine reed. In October of the same year we published several letters from readers commenting on the subject and offering a number of further suggestions. As we enter 1938, this cooperative attitude among textile men still exists; below are published two further communications outlining methods for prevention of rolling ends in split basket weaves.

False Reed Advocated

Technical Editor:

With reference to rolling of ends in split basket weaves, I notice one of your contributors suggests splitting the shed by uneven staggering of stirrups on jacks. He also states that loomfixers have by force of habit been following the method of putting No. 1 harness on the bottom notch of No. 1 jack and systematically going up one notch every two harnesses.

Well, far from being force of habit, this is done to get yarn in the top half of the shed level. The back harnesses have to rise higher to lift the yarns they carry to the same level as the yarns controlled by front harnesses. If, as your contributor suggests, No. 3 harness is put on No. 6 notch, the yarn from this harness will rub against the back top of the reed cap, thus creating a situation worse than the original one.

To separate the yarns in this basket weave I suggest a false reed made of discarded wire heddles and an old heddle bar. This is not so complicated an arrangement as the double reed suggested in the October TEXTILE WORLD and is every bit as effective, if not more so.

After a warp has been started, the ends are separated by placing a row of heddles—one for each end in the warp—in the space between harnesses and reed. These heddles are threaded on a heddle bar, which is then attached to the back of the reed cap, using a 5/16-in. wood screw at each end and in the center a leather loop tacked to the reed cap. At the lower or free end these heddles are held in place by tying harness cord from end to end of back stay or reed cradle—thus leaving them free to move from side to side, but preventing them from interfering with the harnesses.

This arrangement is inexpensive and can be varied to suit conditions.

ALCIDE E. CHOUQUETTE,
Rhode Island.

Suggests Special, Flexible Reed

Technical Editor:

Your original suggestion that a fine reed be used is the best way to handle split baskets. However an ordinary reed will not do the trick, except at the expense of poor production and bad work.

The best thing to use is a specially built, flexible, fine reed, made as high as the reed-cap slot will allow. The main feature of this reed is that the wires are rolled very thin and very wide. A 30-dents-per-inch reed will have as much or more space for the yarn than a 15-dent reed made with regular wire. Further, the thin wire and the added height give the reed a flexibility which allows yarn to go through easily without cutting off the knots. These reeds will positively stop rolling ends and will not hinder production nor make bad mending.

Reeds of this type are quite expensive, but soon pay for themselves, as the cost of mending one cut of fine worsted with rolling ends will more than cover the cost of a reed.

However, if double reeds are preferred, why not have them built V shaped, single at the top and double at the bottom? This is far better than using two reeds, does away with all extra clamps, etc., and there is no possibility of the yarn going through the reed at an angle. At each cut mark put on a plain weave chain and weave about an inch to straighten out any ends that have a tendency to roll. The double reed built as above will not entirely stop rolling, but will greatly help.

Staggering the harnesses with the jack notches also helps, but when a pair of ends starts rolling, it will roll in spite of the break in the shed. The fake weave idea previously mentioned was used by the writer about 25 years ago; this eliminated the rolling, but some of the buyers objected to it because, when viewed from some angles, it gave the appearance of an imperfect weave, which, of course, it was.

One successful way of preventing rolling ends is to weave a fine cotton thread every third pick, splitting with the cotton, every second or third basket, the ends that can roll, using 120/1 white cotton. This requires a special head chain, and the take-up pawl must be lifted on the cotton pick. The cotton is brushed out before wetting out the goods; care must be taken not to bind it in too often, or it will be difficult to remove. If properly handled, this method will produce perfect goods, but it increases the weaving cost and adds another, rather messy, operation to the finishing, since the fine, white cotton flys around the room during the removal process.

When weaving split baskets on satin-back cloths, the kink is to change the order of warp dressing from one face, one back to two face, two back. Then, stitching the back with the usual eight harness satin weave will make cloth perfect in every way, since the basket can be split with the stitching.

FRED R. ELSTON,
Pennsylvania.

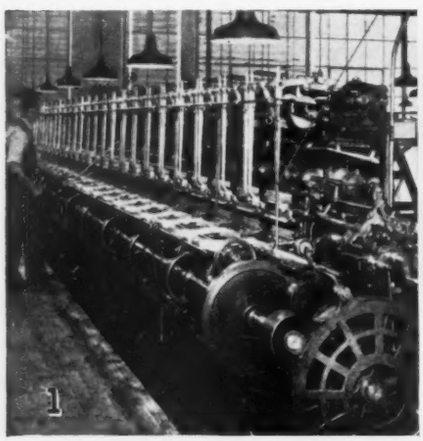
New Machinery and Processes

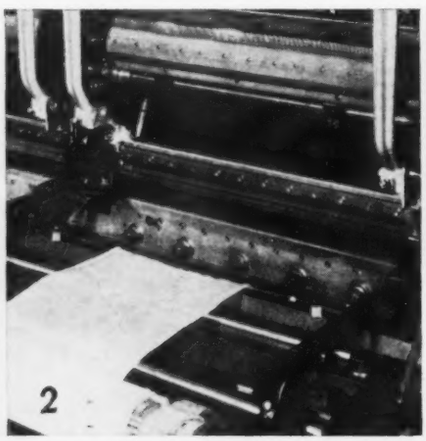
Welt Device for Full-Fashioned Hosiery Machines

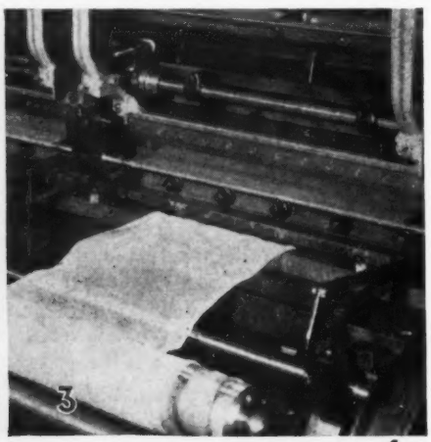
Commercial production of an automatic, mechanically operable welt device for full-fashioned hosiery machines has been announced recently by Karl Lieberknecht, Inc., Reading, Pa. During the last two years this device—which was developed by Max C. Miller, knitting engineer and author of "Knitting Full-Fashioned Hosiery" and other books on knitting—has been installed on 168 machines in Germany and other European countries. In addition, it has been tested out for eighteen months at Chipman Knitting Mills, Easton, Pa., where several machines have been equipped with the welt device. The major advantage of the device is that it permits setting-up of the initial courses and turning of the welts to be carried out without stopping of the knitting machines and without requiring any skill or laborious effort on the part of the operator. Time studies indicate that use of the welt device gives an increase of 20 to 25% in legger productivity. This is accomplished by eliminating machine stoppages for removing the previous set of stockings from the machine, manually engaging each welt rake with the initial course of loops and attaching it to the fabric take up, and turning welts manually. The device is designed for application either to new machines or to those already in operation, with the exception that it will not be built for machines coarser than 42-gage.

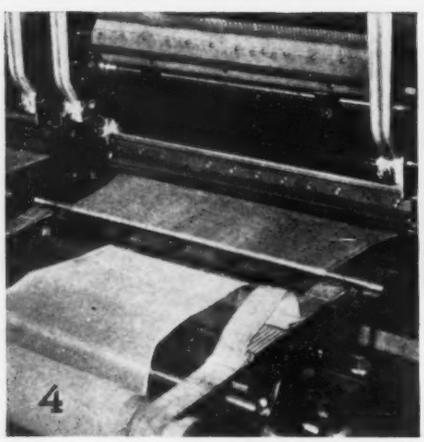
The welt device consists essentially of freely swinging pendants, one at each section of the machine, mounted at points considerably above and approximately in line with the needles. The pendant supports, each of which is independent of the others, are operable to move the pendants up and down. Additional levers are provided to move the pendants in and out. All movements of the pendants are from cams on a camshaft which is mounted well above the narrowing machine and which is rotatable from the drive of the machine.

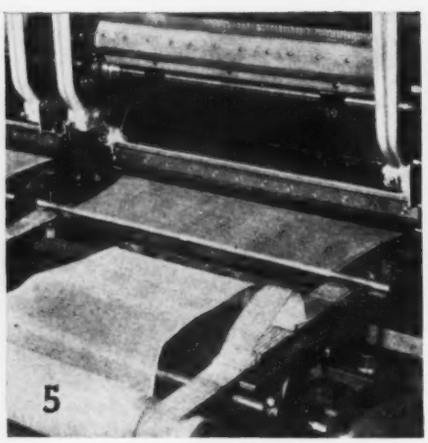
The lower ends of the pendants are fitted with welt-hook bars. These bars are fitted with welt hooks, one for every other needle. After the laying of the first course of yarn,

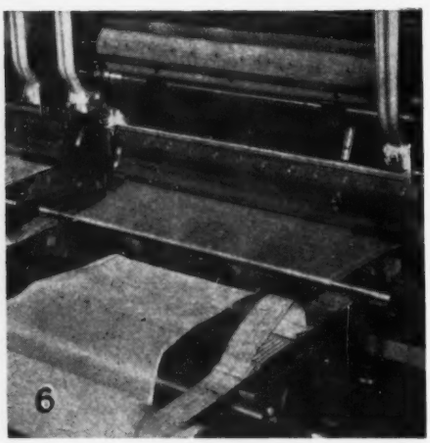












1. Knitter lowering welt device into position for later automatic operation to set up new stocking; previous set still on machine. 2. Welt hook is now clearing the needles with first course held on the hooks and needles. 3. First half of welt is knitted; material is still on the welt hooks; picot is engaging needles. 4. Welt is completely knitted; welt rods have been hooked up; hooks are about to engage needles for turning and transferring. 5. Welt hooks are engaging needles and transferring loops from hooks to needles. 6. Operation is completed and machine is about to knit the after-welt; welt devices can be raised simultaneously to inoperative position any time

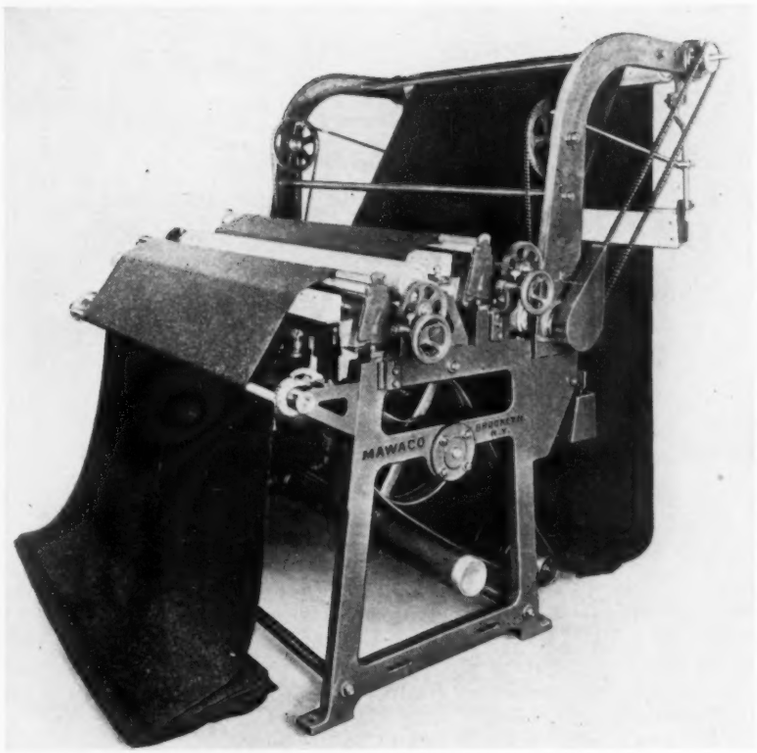
the welt hooks automatically and at pre-selected times, as dictated by the pattern chain, engage with alternate needles, press their beards above the yarn line, and thus cause these alternate needles to fail to engage with the initial yarn. At the knock-over position the welt hooks are caused to engage with these cast-off yarn bights. As a result, after the laying of the initial yarn and the first needle movement, the welt hooks engage with alternate bights of yarn and deposit and tension them to the back side of the needles prior to the knitting of the second course. The pendants, through the action of a pair of springs for each individual pendant, act as fabric take-ups until a few inches of the welt has been formed. While the machine is knitting these few inches of fabric, the operator attaches the regular take-up straps to the welt wire. Subsequently the pendants cease to act to take-up the fabric.

When sufficient fabric has been produced, the operator positions the picot bars in the normal manner while the machine is running, so that the picot and subsequent fabric can be produced. Thereafter, at a predetermined time, depending upon the length of the welt, the pattern chain automatically activates the welt camshaft, which, in turn, causes the pendants to move toward the needles during the laying of the yarn for the course to which the initial welt loops are to be joined. The timing is such as to permit the welt hooks to pass over the needles immediately after the hooks leave the sinker noses and reach the first knock-over position. There is no interference between the needles and hooks, and the welt hooks are positioned against the press edge of the machine by the time the needles reach the final knock-over position.

At this time, the needles engage with grooves provided in the welt hooks and are thereby registered with them. On their upward movement the needles enter the loops of the initial course of knitting held by the welt hooks. The welt hooks then move downward, disengage from their loops, and are raised clear of the needles during the time the latter are rising to reach the proper position for the next yarn-laying operation. At any time after the welt hooks have been lifted over the needles and out of the way, the operator, by turning a crank, can simultaneously raise all the pendants into their high idle position. Thereafter the knitting of the leg fabric is continued in the normal way.

The manufacturers of the welt device point out that, not only has the welt been formed entirely mechanically, but it has the further advantage—incidental to the alternate needle set-up and transfer—of providing a resilient course of loops at the welt juncture. This is said to prevent the dropping of stitches from the welt downward past the welt-juncture line when the stocking is in use. Another feature cited is the fact that the operator's labor, incidental to knitting the legs of stockings, is appreciably lessened, while the skill formerly required for welt turning is entirely unnecessary. It is stated also that no more than half the number of needles are broken on machines equipped with the welt devices as compared with manual setting-up and turning of welts.

In a report made by Ernst & Ernst, accountants and auditors, it is shown that at Chipman Hosiery Mills production of 2-thread, 45-gage hosiery was increased 21.8% and 22.3%, respectively, after installation of the welt devices on two 24-section machines. According to Ernst & Ernst, potential reductions in cost, based on a 20% increase in production, are approximately 18.4c. per doz. in direct labor, subject to agreements with the knitters or the union, and approximately 10c. per doz. in overhead expenses.



Double-Slot Vacuum Extractor (Mawaco)

Double-Slot Vacuum Extractor

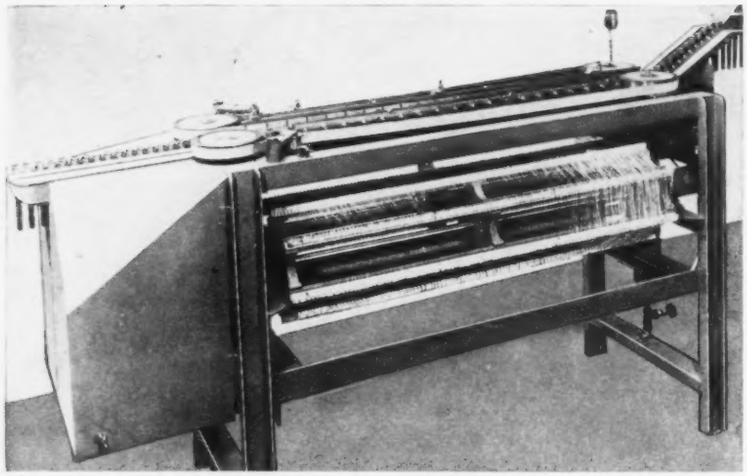
Several new and interesting features are included in the double-slot vacuum extractor offered by Mawaco Machine Co., 476 Jefferson St., Brooklyn, N. Y. Outstanding is the fact that width of the vacuum slot is adjustable. It is believed mills handling a large variety of fabrics will especially welcome this feature due to the fact that, with slot-size adjustability, every fabric run over such a machine is treated alike, whether it be a light dress goods or a heavy overcoating.

Other features of the machine include two suction slots, for higher production; quick and minute adjustment of width of slot; and a four-speed gear box, for cloth speeds ranging from 12 to 23 yd. per min.

It is stated that actual tests showed 70 to 85% of water extracted from cloths ranging from 8 oz. to 27 oz. per yard, at cloth speeds of 16 to 23 yd. per min.

Stainless Steel Dye Kettles

Stainless steel dye kettles for either rope or open-width dyeing, are now being offered by Birch Bros., Inc., Somerville, Mass. The line consists of open, inclosed, and insulated kettles. Reels and tubs have been so



Silk and Rayon Bobbin Stripper (Terrell)

designed as to prevent slippage, packing, or tangling of cloth. Bearings, doffing-reel arms, and motor-drive brackets are supported by heavy, carefully-machined side frames in such a manner that no strains are put on the tub. Reels are so constructed that they can readily be made elliptical or round, and any number of rails can be used.

Silk and Rayon Bobbin Stripper

A new bobbin stripping machine, has been put on the market by the Terrell Machine Co., Charlotte, N. C., designed primarily for the cleaning of rayon and silk bobbins including the new flat type. The machine, known as Type L, is based on the U. S. Lonzo patent No. 1990740 acquired from the H & P Spool & Bobbin Co., Lawrence, Mass., and on patent applications acquired from several other quarters. The features claimed for the new machine are efficiency and freedom from possibility of injury to the brittle enamel used on many rayon bobbins. Compressed air is used for starting the yarn ends from the bobbins and a pair of brush-covered rolls to complete the unwinding.

The bobbin feeding mechanism consists of two belts which are pressed together against the bobbin heads and move them through the machine. With an operator of average skill a speed of 90 to 100 bobbins per minute can be maintained. The cleaning rolls are equipped with ball-bearings and only ½-hp. motor is required to run the machine.

Explosion-Proof Motor

A line of explosion-proof, squirrel-cage, a-c. motors, with mounting dimensions conforming to N.E.M.A. standards, is announced by Reliance Electric & Engineering Co., Cleveland, Ohio. It is stated that these motors have been tested and approved by the Underwriters' Laboratories for Class 1, Group D, hazardous locations, which include those in which flammable volatile liquids, highly flammable gasses, mixtures, or other highly flammable substances are made, used, or stored in other than original containers. Construction is said to be such that all working parts are completely inclosed, and the housing is strong enough to withstand even an internal explosion without bursting,

Explosion-Proof Motor (Reliance)

loosening the joints, or permitting flame to escape into the outside air. Rotors are integrally cast to assure both the reliability and uniformity of performance.

Raising Brush for Shears

A new raising brush for shears, which is said to eliminate the problem of ridges on surfaces of fabrics, formerly caused by such brushes, is now offered by Frank H. Hardy, Shawsheen Village, Andover, Mass.

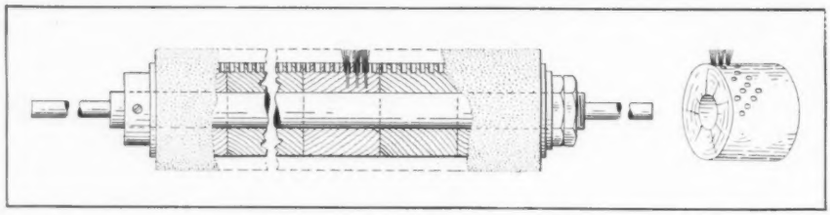
The new brush is built on the theory that ridges of this type are due to the fact that wooden rollers cut from logs are necessarily out of balance, having one side heavier than the other, because they are part of a cross-section of a tree, which varies in density from its center to its outside edges. To overcome this problem, the Hardy brush is composed of a number of short sections, slipped over an arbor and held tightly together by large nuts screwed on to the end of the roll. These sections are so set that the denser, heavier sides of the cylinders are staggered to counterbalance each other, in order that the weight will be properly distributed around the roll. Different parts of wood tend to absorb moisture in varying amounts, and the effect of this in throwing the roll out of balance can be counteracted at any time by unscrewing the nuts and revolving the sections of the roll until its balance is regained.

The Hardy brush, it is also stated, has smaller tufts, but approximately five times the number formerly used, thus giving a flexible, constant brushing surface and more even bearing on the cloth. In addition, bristles are inserted in the brushes in a new manner. Instead of inserting bristles straight in the holes with their coarse ends down, and holding them in place mainly by an adhesive, bristles are now bent over, V-shape, and held in place by staples, thus permitting coarse tips to join fine tips at the surface.

The brush shaft is made of cold-rolled steel. Brush sections may be removed when a brush is worn out and replaced by new sections, thus saving the cost of a new shaft.

Acid-Resistant Paint

An interior paint with extreme resistance to corrosion by acids, chemicals, alkalis and fumes is being manufactured and marketed by American Asphalt Paint Co., Chicago. The new product, known as Sarva, has been, it is said, highly successful in protecting surfaces in bleacheries, underground and inside pipe lines, acid



Raising Brush for Shears (Hardy)

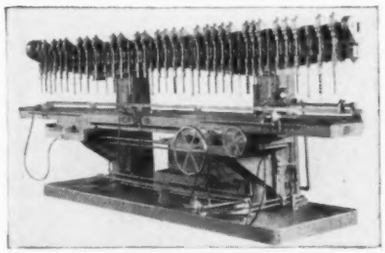
baths, and other points at which similar conditions exist. It is stated the product is also successfully used for coating interiors of wood and metal tanks. In the case of wooden tanks it serves the double purpose of water-proofing and protecting the surface.

It is stated that Sarva is odorless and tasteless, and will not discolor water. It is available in red and black. Application, by means of ordinary paint brush or spray gun, is said to be simple. Approximately 12 hours drying time is required.

Multiple Creel-Board Borer

A new machine for boring textile machine creel boards has been developed by B. M. Root Co., York, Pa. The machine is a vertical multiple borer, designed to bore equally spaced holes, in rows, over considerable areas.

In operation, stock to be bored is placed on the table and held in position by air clamps which exert sidewise pressure. The table moves vertically toward boring bits by means of hydraulic feed and, after boring a row of holes, returns to its starting position. The compound table is then indexed lengthwise or crosswise, as desired, and another row of holes is bored. By continuing thus an entire series of rows of holes may be bored on any predetermined centers over the entire width and length of the stock.



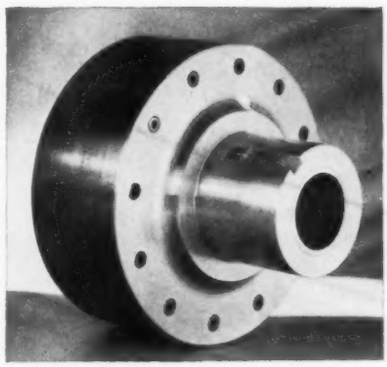
Multiple Creel-Board Borer (Root)

The accompanying illustration covers a 16-foot machine, with boring spindles revolving at 1,800 r.p.m., and with the table capable of from 2 to 24 strokes per min. Actual floor space required for a 16-ft. machine is 5 ft., 6 in. by 18 ft. The borer is available in various capacities and numbers of spindles.

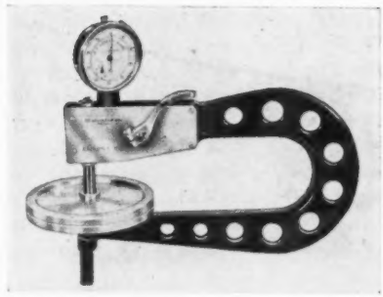
Over-Running Clutch

A line of over-running or "free wheeling" clutches has been made available recently by the Hilliard Corp., Elmira, N. Y. On production machinery which runs intermittently or with reciprocal motion, the clutch transmits power efficiently through the operating cycle, then automatically disconnects and idles until power is again applied.

The unit is also used in dual drives to protect the prime mover which is not in immediate use and to transmit power from the other; and likewise to control two-speed drives. It provides a ratchet application capable of infinite adjustments, and a positive backstop for conveyors, elevators, etc.



Over-Running Clutch (Hilliard)



Pile Depth Micrometer (Metzger)

Pile-Height Gage

Accurate determination of pile thickness in fabrics, such as plush, carpets, etc., is possible by use of a new pile-height micrometer developed by F. F. Metzger & Son, 2600 N. Sixth St., Philadelphia.

The new micrometer, it is stated, is a simple, strong and durable instrument which anyone can use. It is manufactured in ½-in. ¾-in. and 1-in. sizes. Micrometer readings are to 0.001 in.

NEW DYES & CHEMICALS

Rayon Sizing Compound

E. I. du Pont de Nemours & Co., Wilmington, Del., has announced the development of a water-soluble synthetic product for sizing viscose and acetate warps and the filling yarns of crepe fabrics. The new product, which is known as Rayon Size MW, is a derivative of a synthetic resin. It is indefinitely stable, and sized yarns can be stored for long periods without fear of the size becoming insoluble. The viscosity of solutions of Rayon Size MW is unaffected by continued heating and stirring, and the danger of uneven results caused by such a change in the natural sizings is eliminated. Desizing is accomplished with the aid of fatty alcohol sulphate detergents to insure even dyeings. The new size is free of sulphonated or unsulphonated oils and fats, and it is recommended that it be used without the addition of these materials. Yarn sized with it is said to be remarkable for its softness and flexibility, coupled with its unusual resistance to abrasion. Another advantage cited is that warp streaks are greatly reduced or eliminated in fabrics woven from yarn sized with this synthetic material.

Rayon Size MW is also recommended for sizing the filling yarn for pile fabrics. In addition, it can be used for sizing crepe yarns. In order to obtain uniform, flat crepes it is necessary to make allowances for the ready solubility of this agent. Concentrations of from 0.1 to 0.5% are usually satisfactory for this purpose.

Rayon Size MW is sold in the form of flakes, which dissolve readily in hot water by the same procedure used for preparing gelatine solutions. Its solutions have a tendency to foam, and, for this reason, it should be applied at somewhat lower temperatures than are used for gelatine. Since it has good penetrating properties, temperatures of 120 to 140° F. are permissible. It is stable to high temperatures, and where foaming difficulties are not encountered, as with low speed slashers, temperatures as high as 160 to 180° F. can be used.

Acetate Colors

Pan-American Color & Chemical Co., announces the following new acetate dyes: Panacet Brilliant Blue B, Brilliant Pink 2B, Turquoise Blue, and Rubine B Conc. These products are all characterized by a very rapid absorption rate; fastness to dry cleaning, perspiration, light, and washing is, in general, very good.

Emulsifying Agent

Glycol glyceryl stearate, a new emulsifying agent, has just been introduced under the name Glycoride, by Glyco

Products, Inc., 148 Lafayette St., New York. Glycoride is a light-colored, wax-like solid which readily disperses in hot water, forming on cooling stable fluid or paste emulsions according to concentration. A 1% dispersion in water has a pH of 5.9, and emulsions made with Glycoride have a pH of 6.4, provided no alkali-producing materials are added. Paste emulsions made with Glysoride are said to withstand freezing to a considerable extent and in most cases, even when frozen, can be restored to their original state by warming gently. The new product is recommended as an emulsifying and thickening agent for the manufacture of textile emulsions where freedom from alkalinity, soaps, and inorgaanic salts is important.

NEW PUBLICATIONS

THE ROMANCE OF TEXTILES, by Ethel Lewis; MacMillan Co., New York; 377 pages; $4.00.

It is impossible to limit the potential audience for this book. Those actively engaged in the textile industry; those in the related trades; men and women interested in any phase of interior decoration—these and many more groups will read "The Romance of Textiles" with both profit and pleasure.

Miss Lewis, who is associate editor of *Interior Design and Decoration*, has found that a great many people want to know about textiles, and so she has recorded their romantic history from the earliest days of Egypt down to the present. There are stories of the development of silk through thousands of years in China, and ancient tales of the gorgeous textiles worn by kings and emperors. Miss Lewis compares Coptic weaving with that of Peru. She tells of patterns designed for fabrics by Rennaissance artists, and leads you through the gay and tragic days of court life in Europe. The cottons of India, the hand-loomed fabrics of the Colonies, are included. Added to this storehouse of information is a good glossary.

YOU HAVE SEEN THEIR FACES, by Erskine Caldwell and Margaret Bourke-White; Modern Age Books, Inc., New York; 54 pages, 75c.

Anyone unfamiliar with the photography of Miss Bourke-White should remedy this lack at once. And, if he is a textile man, "You Have Seen Their Faces" is an excellent way to start, since it is a series of remarkable photographs of the life of the southern share-croppers—with incidental words by Mr. Caldwell. No matter what attitude the reader may have toward the share-cropper system, he cannot fail to be fascinated by the illustrations. So far as this reviewer is concerned, Miss Bourke-White is No. 1 photographer in the country today.

Incidentally, this is another of the noteworthy series of low-priced books being published by Modern Age Books, Inc. This particular volume is as good value for 75c as even the sharpest trader could demand.

MECHANICAL CHANGES IN THE COTTON-TEXTILE INDUSTRY, 1910 to 1936; By Boris Stern. Report No. B-2, studies in changing labor productivity, Works Progress Administration, National Research Project and Bureau of Labor Statistics, U. S. Department of Labor. Philadelphia, Pa.

Boris Stern, economist in charge of the studies in changing labor productivity which is one of the current federal research projects, here summarizes the findings of a recent study. The volume covers changes in manufacturing methods, labor requirements, etc., supplemented by statistics showing trends through this 26 year period.

MEN WHO LEAD LABOR, by Bruce Minton and John Stuart; Modern Age Books, Inc., New York; 270 pages, 35c.

This is a series of studies of the important men in the labor movement. A chapter each is devoted to William Green, William Hutcheson, Edward F. McGrady, John L. Lewis, Heywood Broun, A. Philip Randolph, and Harry Bridges. Then, in a chapter entitled "Giant Killers," are included other labor leaders whom the authors apparently regard as lesser lights. Among these are Sidney Hillman and Francis Gorman.

This is not an unbiased book. The authors are clearly of the leftist persuasion. Nevertheless, to this reviewer, it is a fascinating book. It is written most evidently out of a deep knowledge of the labor movement. In these days, any industrialist should be interested in all points of view on that movement.

I WAS A SHARE-CROPPER, by Harry Harrison Kroll; Bobbs-Merrill Co., New York; 327 pages; $2.75.

A lot has been written lately about the southern share-cropper. But this book, to this reviewer, is unique. It is the autobiography of one who was born and brought up in a share-cropper family and who, through his own effort, hoisted himself out of that class to become a successful novelist.

Obviously, no one man's life story and observations can be taken as an authoritative estimate of an agricultural system. Nevertheless, written so evidently out of a depth of sincerity, this man's story cannot be ignored. It must be taken into consideration by those who are interested in the future of that system. As a matter of fact, this is an easy task. The book has the effect of your own immediate, personal experience. There is much poetry, much sensitive writing in it. The author tells of the poverty and squalor he has known. But he was wise enough to recognize nobility of character when it manifested itself under such surroundings, and he is artist enough to remember and transmit the many human dramas he witnessed.

NEWS OF SUPPLIERS

ROBERT REINER, INC., Weehawken, N. J., has opened a stockroom for machine reserve parts for Einsiedel-Reiner full-fashioned hosiery machines in the Scott Hosiery Mills, Inc., at Graham, N. C. The same company announces appointment of August Schoenenberg as chief salesman for the Tricot and Simplex machines.

THE NATIONAL RING TRAVELER CO., Providence, R. I., announces that Philip C. Wentworth, treasurer of that company, has been elected a director of the National Association of Manufacturers.

POWER TRANSMISSION COUNCIL held its annual dinner Dec. 2, in the Hotel Roosevelt, New York. Speakers were Dr. Harvey N. Davis, president, Stevens Institute; Glenn Griswold, publishing director, *Business Week*; and W. W. French, president Dodge Mfg. Co. C. E. Brinley, American Pulley Co., was toastmaster.

AMERICAN COUNCIL OF COMMERCIAL LABORATORIES has been formed in Chicago by representatives of 20 foremost laboratories. One of the purposes of the council will be the promotion of the proper use of scientific testing methods for the protection and certification of quality in advertised goods. Officers are: President, Preston S. Miller, Electrical Testing Laboratories, New York, N. Y.; vice-president, Monroe L. Patzig, Patzig Testing Laboratories, Des Moines, Iowa; secretary, D. E. Douty, United

States Testing Co., Hoboken, N. J.; treasurer, A. R. Ellis, Pittsburgh Testing Laboratory, Pittsburgh, Pa.

HOMESTEAD VALVE MFG. CO. INC., Coraopolis, Pa., announces that the following representatives have been appointed to handle Homestead quarter-turn valves, lift-plug valves, boiler blow-off valves, and protected seat hydraulic operating valves: Charles A. Randorf, 220 Delaware Ave., Buffalo, N. Y.; Beeler-MacWilliams, Inc., 1002 Hills Building, Syracuse, N. Y.; W. E. Mushet Co., 311 S. W. Front Ave., Portland, Ore.; Clowe and Cowan, Inc., 401 Harrison Street, Amarillo, Texas; Paul R. Winston Co., 206 Construction Bldg., Dallas, Texas; Waterworks Equipment Co., 149 West Second South St., Salt Lake City, Utah; Tazewell Buchanan, 2620 Grace Street, Richmond, Va.

HARRY STEPHENSON, importer, dealer and manufacturer of textile machinery and appliances, has closed his Boston, Mass., office and removed to River Works, Andover, Mass.

WORTHINGTON-GAMON METER CO., Harrison, N. J., announces appointment of W. C. Flanders to post of sales manager, succeeding G. H. Gleason, formerly vice-president in charge of sales, recently resigned from the company.

WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J., announces appointment of W. E. Wechter as manager of oil and gas engine sales, Atlantic division, succeeding R. L. Howes, recently resigned.

WARWICK CHEMICAL CO., West Warwick, R. I., has purchased a bagging plant at Rock Hill, S. C., and will remodel into a factory for manufacture of textile chemicals. The quarters will house the Carolina division of this company. The same company announced appointment of Anthony F. Costello to its technical staff.

THE KRON CO., scales manufacturers, Bridgeport, Conn., announce that J. A. Hunt Co., Philadelphia, Pa., has been appointed district representative there. The Kron company also announces that Herman L. Tygesson has joined the organization as general superintendent, and that Warner De Foe has been transferred to the Bridgeport office as purchasing agent.

OLIVER UNITED FILTERS, INC., New York, Chicago and San Francisco announces appointment of E. Corning Faber to its sales engineering staff. Mr. Faber has had many years filtration experience and was formerly associated with Filtration Engineers, Inc.

CARRIER CORP., Newark, N. J., announces that the company's new six-story plant at Syracuse, N. Y., comprises 1,250,000 sq. ft. in area, with 31 acres of floor space and approximately 14 acres of ground; it occupies one and a half city blocks, 80% of the company's operations will be transferred to Syracuse within a year.

FAIRBANKS-MORSE & Co., Chicago, announce the appointment of T. M. Robie as manager of the Diesel sales division. Mr. Robie has been associated with Fairbanks-Morse since he returned from World War overseas service in 1919. Since 1932 he had been in charge of Diesel sales to resale manufacturers.

LINCOLN ELECTRIC CO., Atlanta, Ga., manufacturers of arc welding equipment, Cleveland, Ohio, announce the opening of a welding sales-engineering office at Atlanta, Ga. The office is under the management of Robert Daniels. Arc welding equipment, including arc welders, electrodes and accessories, together with electric motors, will be available to welding users; the office also offers free consultation service.

HOWELL BROTHERS, formerly of Troy, Ala., recently opened a plant for the manufacture of shuttles, on Chattanooga St., Lafayette, Ga.

HAAS-MILLER CORP., Philadelphia, takes over the entire business of Chas. J. Haas, Inc., as of Jan. 1st, it is announced. They also announce the appointment of R. K. Gurney as New England sales manager.

ARTHUR D. LITTLE, INC., research chemists, Cambridge, Mass., announce the appointment of Dexter North, chief of the chemical division of the U. S. Tariff Commission and in charge of the annual Census of Dyes, as Washington technical representative. In his new work Mr. North will continue to obtain and assemble technical, economic, and statistical information concerning the chemical and other process industries from the many active sources at Washington. Through his present association, however, similar investigations will be made directly for industrialists, as a part of the technical investigations made by the Little laboratories for their clients.

GEORGE F. MOTTER'S SONS, of York, Pa. begins in January, 1938, a series of events commemorating the founding of their business 100 years before. In its early years the company was known as a "manufacturer and builder of steam engines and machinery of all kinds." Today the company designs and builds and reconditions special machinery.

LEIPZIG TRADE FAIR, INC., New York, announces that the fair will hold its 1,979th session from March 6th to 14th. To accommodate new exhibits two halls, with over 200,000 square feet of display space, will be added to the fifty-one exhibition halls heretofore in use. The Spring Fair will include some 10,000 exhibits of every industrial and art product assembled from twenty-one countries including the United States. An attendance of over 250,000 is expected.

ELECTRO METALLURGICAL CO., New York, is co-sponsor with the New York Museum of Science and Industry, of a stainless steel exhibit, now being held at RCA Building, Rockefeller Center, New York City. The display includes hundreds of stainless steel products sent to the exhibit by manufacturers from all over the United States. The exhibits are supplemented by a varied assortment of motion pictures and other demonstrations.

CRANE CO., Chicago, announces formation of a division of engineering and research, with L. W. Wallace, head of engineering research for the Association of American Railroads, as director; the new division will comprise the existing division of research and development and the product engineering department of the Crane company.

HERCULES POWDER CO., Wilmington, Del., announces election of four new members to the board: W. R. Ellis, general manager, explosives department; Lloyd Kitchel, general manager, Virginia cellulose department; P. W. Meyeringh, manager, foreign relations department; and E. B. Morrow. Mr. Morrow, who resigned his position as secretary of the company, also was elected a member of the finance committee. H. F. Smith, secretary to the president, was elected secretary of the company.

LINK-BELT CO., Chicago, announces the following changes in personnel: Harold L. Hoefman has been appointed manager of the Link-Belt plant, warehouse and sales office at Atlanta, Ga., to succeed I. H. Barbee, who died recently; George A. Paige has been appointed manager of the warehouse and sales office in Detroit; Laurance O. Millard has been appointed district sales manager at Pittsburgh; Paul V. Wheeler has been appointed district sales manager at Cleveland.

NORTHERN EQUIPMENT CO., Erie, Pa., announces the resignation of Alden L. Covill, Rochester representative for the Copes System of Boiler Feed Control and allied equipment, since 1918, who is retiring from business. The Rochester territory will hereafter be covered by Charles A. Randorf, Buffalo, N. Y., who will retain his present territory.

THE PERSONAL PAGE

Louis J. Jones has been elected president, and **Chas. K. Cobb** secretary and general superintendent, of Canton, (Ga.) Cotton Mills. Mr. Jones succeeds his father, the late R. T. Jones.

Thomas J. Wallner, president of Virginia Maid Hosiery Mills, Pulaski, Va., was recently reelected president of the Virginia Manufacturers Association, at its 16th annual meeting held at Richmond.

W. D. Carter, for many years identified with the Marshall Field organization at Leaksville-Spray, N. C., was recently elected executive vice-president of the Susquehanna Silk Mills, Sunbury, N. C.

J. Ben Cooper has joined the Diamond Full-Fashioned Hosiery Co., at High Point, N. C., as vice-president, in charge of production.

Capt. Elliott White Springs, of Fort Mill, S. C., president, Springs Cotton Mills, Chester, S. C., has donated land for construction of a $25,375 school building at Hemlock Station, Chester suburb, the location of the Eureka plant of the company.

Clarence L. Ederer, of R. J. Ederer Thread Co. Philadelphia, was reelected president of the Philadelphia Textile Manufacturers Association at the annual meeting of that body in Philadelphia last month.

R. C. Boger, president of Boger & Crawford, Inc., mercerized cotton yarns, Philadelphia, announced that he had acquired the stock of the firm which has been held by his former partner, the late Alfred Crawford, and now is sole owner of the business. Business policy will be unchanged, he stated.

E. C. Dwelle, who has been with the Gossett chain of mills for 34 years, has resigned as vice-president of Chadwick-Hoskins Co., Charlotte, N. C., and of the Martinsville (Va.) Mills because of his health. **G. G. Cromer,** who has been assistant treasurer at Chadwick-Hoskins, succeeds Mr. Dwelle in both offices. **N. G. Hardie,** formerly assistant general superintendent of Gossett Mills, becomes general superintendent of Chadwick-Hoskins and Martinsville. **S. H. Lander** is appointed vice-president of Calhoun Mills, in addition to his present position as executive vice-president and assistant treasurer of Gossett Mills.

Frederick D. Corley, president, has become chief executive officer of Marshall Field & Co., Chicago, subsequent to abolition of the office of chairman of the board, following the recent death of the chairman, James O. McKinsey. **H. M. McBain,** vice-president has become first vice-president and resumes his former post in charge of manufacturing; **Kenneth E. Armstrong,** assistant controller and secretary, will serve temporarily as controller. Mr. Corley joined the organization in 1900 as stock boy at $4.00 a week. **Joseph B. Platt,** director of the company's bureau of style and design, has resigned, effective Jan. 1 and will operate his department as an organization separate from the company, continuing, however, to style the firm's lines and also expanding into other fields.

Frederick D. Corley

D. K. Chalmers, New York manager for Holeproof Hosiery Co., Milwaukee, has been appointed vice-president and general manager, succeeding the late Felix Lowy.

A. B. Barns, treasurer of the Massasoit Mfg. Co., Fall River, Mass., has been made treasurer of Ponemah Mills, Taftville, Conn., it is announced.

H. B. Jennings, president of Mansfield Mills, Inc., and Jennings Cotton Mills, Inc., both of Lumberton, N. C., will retire from both positions Jan. 19, the date of the annual stockholders' meetings. Mr. Jennings has been head of the Jennings Mills since they were founded in 1910, and of the Mansfield Mills since 1924.

Thomas J. Nicholas has been appointed manager of the Atlanta, Ga., office of Pepperell Mfg. Co., it is announced. He succeeds **Garntt Robey** who has gone to Riegel Textile Corp., New York.

Roy E. Tilles, president Gotham Silk Hosiery Co., New York, returned last month from a holiday in Mexico.

W. Needham has been chosen as superintendent of the Drummondville (Que.) Cotton Co. Ltd., succeeding H. F. Ludington Michelson. The plant is being reorganized and much new machinery will be installed.

Frank Ernst has been appointed plant manager of the Old Hickory, Tenn., rayon division, of the E. I. du Pont de Nemours & Co., Inc., succeeding **Arlington Kunsman,** who becomes director of rayon production with offices in Wilmington, Del. Mr. Kunsman will have charge of the plants in Buffalo, Richmond and Old Hickory. **W. D. Hartford** has been appointed chief supervisor of plant No. 1, at Old Hickory. **Willis Shackelford,** manager of the Richmond, Va., rayon plant, becomes assistant manager of the acetate division, with headquarters at Wilmington, Del. He is succeeded locally by **E. E. Swensson. J. E. Dean** has been transferred from Old Hickory to be assistant supervisor, chemical and casting areas, at Buffalo, N. Y.

J. A. White has been appointed plant manager of Slater Mills, Marietta, S. C., succeeding **W. K. Taylor** who has joined Appleton Mills, at Anderson, S. C.

James G. Torrens, for 10 years a member of the statistical department of the Cotton-Textile Institute, New York, has been appointed statistician of that organization, it is announced.

A. J. McDermott has been named New York sales manager for Artloom Rug Mills, New York. He was formerly with American Rug & Carpet Co.

D. E. Douty, president and general manager of the United States Testing Co., Inc., completed 25 years of service, on Jan. 1, as head of its testing laboratories.

Shirley G. Dixon, of Courtaulds (Canada) Ltd. has been appointed president of that company succeeding H. Johnson, who becomes chairman of the board.

John H. Holt, for 33 years with Luther Mfg. Co., Fall River, Mass., latterly as treasurer, has retired and the post has been given to **M. Richard Brown.**

Rufus W. Scott, chairman of the executive committee of Tubize Chatillon Corp., New York, recently returned from a holiday in Europe.

John F. Yare, formerly general manager and superintendent of Middlebrook Mills, North Adams, Mass., has been appointed to a like post with Winchester (Va.) Woolen Co.

Howard Spry, of Shelby, N. C., has been appointed night superintendent of the Riverside Mills, Enoree, S. C.

James A. MacDonald, general superintendent of the wool and top departments and also head of the yarn department of Arlington Mills, Lawrence, Mass., recently completed 50 years of service in the textile industry. He was presented with a 50-year pin by **President Franklin W. Hobbs** at a dinner attended by company officials.

J. M. Gayles has become superintendent of the Albert J. Barston Mill, at Charlotte, N. C.

A. K. Stewart, for 18 years with Lonsdale Co., Providence, R. I., has joined the American Thread Co., as agent of that firm's Westerly (R. I.) Mills, succeeding A. W. Bell, retired.

H. C. Borghetty, formerly technical director of the Aspinook Co., of Jewett City, Conn., has been appointed superintendent-chemist of the Pilgrim Piece Dye Works, Brooklyn, N. Y.

Henry H. Crapo, president of the Gosnold Mfg. Co., New Bedford, Mass., recently gave an address in that city on "The Story of Cotton and Its Manufacture Into Cloth in New Bedford." The talk was given before members of the Old Dartmouth Historical Society,

of which Mr. Crapo is the president. The Society also sponsored an exhibition of cotton textiles which included some of New Bedford's finest cotton products, and also museum pieces loaned by M. D. C. Crawford of New York City, the exhibition being open to the public for two weeks.

Robert R. West, president of Riverside & Dan River Cotton Mills, Danville, Va., has been awarded the citizenship trophy offered by the Kiwanis Club to the most useful citizen of Danville during the past year. Mr. West was chosen because of his continuing interest in civic affairs, and more especially for his work in raising funds for the blind and for his look into the future of Danville, which is now being plotted by the Greater Danville Committee, of which he is chairman.

Eugene M. Long, general superintendent of the May Hosiery Mills, Inc., Burlington, N. C., since 1927, and also a stockholder, has sold his interest in the mill and resigned his position.

R. C. Thatcher, president of the Standard-Coosa-Thatcher Co., Chattanooga, Tenn., was recently appointed vice-president of the industrial division, Community Chest campaign.

F. J. Downs has been appointed general manager, Renfrew Woolen Mills, Ltd., operating large mills at Carleton Place and Renfrew, Ont., Canada. Mr. Downs was until recently general manager of the Barrymore Cloth Co., Toronto.

Jackson H. Marx, president, Associated Textiles of Canada, Ltd., and president of the Silk Association of Canada, sailed recently for England on a business and pleasure trip.

Albert Vanasee is now in charge of the finishing of the Blackinton Co., Blackinton, Mass.

Col. W. N. Campbell, president of Goodall Worsted Co., Sanford, Me., was honor guest at a dinner in Portland, Me., attended by about 500 distinguished citizens of the state and nation recently. During the dinner, Guy P. Gannett, local publisher, announced that Mr. Campbell will be his partner in the new Portland Broadcasting Co. The dinner was sponsored by Harold T. Andrews Post, American Legion, to show its appreciation of Col. Campbell's efforts in behalf of the Post's Junior Drum and Bugle Corps which took fourth place in national competition at the National Legion Convention in New York last September.

Werner Winkler has transferred from the Shelton, Conn., mill of the Sidney Blumenthal & Co., to take charge of finishing at the Clayville Knitting Co., Clayville, N. Y.

James Hutchinson of Newburgh, N. Y., has gone to Fall River, Mass., to take charge of the finishing for the Arkwright Corp.

W. H. Mathis has become overseer of carding, spinning and spooling at the Milstead, Ga., plant of the Callaway Mills.

B. A. Andrews has been appointed master mechanic at the plants Nos. 2 and 3 of the Easley, S. C., Cotton Mills.

J. H. Nelson, formerly master mechanic at the Washington Mfg. Co., Tennille, Ga., is now chief master mechanic at the California Cotton Mills, Oakland, Cal.

C. E. Wylie, formerly of Chester, S. C., has become purchasing agent for the Greenwood (S. C.) Cotton Mills, Mathews Cotton Mills, Greenwood, S. C., and the Ninety-Six (S. C.), Cotton Mills.

J. B. Bell has resigned as overseer of carding at the Standard - Coosa - Thatcher Co., Chattanooga, Tenn., to become general overseer of carding at the Brookside Mills, Knoxville, Tenn.

John Gannon, formerly overseer in the weaving department of the Otis Co., Ware, Mass., has accepted a similar position with the Riverside & Dan River mills, Danville, Va.

J. A. Gorham formerly of Columbus, Ga., is the new superintendent for the Cherokee Mill, Acworth, Ga., formerly the Elizabeth Bartlett Mill.

W. E. Campbell, formerly overseer of carding at the No. 1 plant of the Republic Cotton Mills, Great Falls, S. C., has been promoted to a like position at the No. 3 plant, which is the silk mill.

Harry J. Pollock has resigned as general manager of the Olga Knitting Mills, Watertown, N. Y.

E. S. Black has become assistant to the overseer of carding, spinning and spooling at the Milstead, Ga., plant of the Callaway Mills.

Seabury Stanton recently was reelected treasurer and clerk of the Hathaway Mfg. Co., New Bedford, Mass., at the annual meeting of the corporation. Directors reelected were **James E. Stanton, Jr., Henry H. Crapo, Henry S. Knowles, Joseph K. Milliken, Otis C. Stanton** and **Seabury Stanton.**

A. E. Dyson is now overseer of the cloth room of New City Cotton Mills, Newton, N. C.

William G. Stainton, general manager of the liquidated Otic Co. mills, at Ware, Mass., has accepted a position with the Alabama mills in Birmingham, Ala.

Herman Chopak, president of Chopak-Textile Co., Inc., New York, was honor guest at a dinner, Dec. 7 at the Hotel Astor, New York, tendered by several hundred friends in the silk and allied industries.

J. E. Jacobs is now overseer of the folding department, Arkwright Finishing Co., Fall River, Mass.

Frank Griffin, vice-president of the American Viscose Corp., New York, returned recently from a trip to Europe.

Nelson E. Howard, an overseer in the Sulloway Mills, Franklin, N. H., has been nominated as Republican candidate for mayor of that city. He will oppose the present mayor, **Alphonse Legasse,** a Democrat, who has served four terms.

Edward C. Fox, of Toronto, and **W. C. Boyd,** manager of mills for the company, have been elected directors of Canadian Cottons, Ltd., Montreal, Que. Vacancies were created by the resignation of **W. A. Black,** and the death of George C. Caverhill.

How's This for Service?

Cannon Mills, with headquarters at Kannapolis, N. C., last month had a banquet for 359 employees who have been with the company for 25 years or more, aggregating 10,000 years of service. There are 1,046 members of the organization who have been with the mill for more than 20 years.

J. H. Wisselink, internationally known textile manufacturer of Holland, was recently in the South on a tour of inspection.

Wm. D. Anderson, president, was the chief speaker at a barbecue supper and social of the 1,500 employees of the Bibb Mfg. Co., Macon, Ga., Dec. 18.

Abram R. Peterzell, of Onyz Knitting Mills, Philadelphia, **A. A. Milot,** of M. & F. Worsted Mills, Inc., Providence, R. I., **S. M. Becker, Jr.,** of Fahnestock & Co., New York, and **H. G. Reifsnyder,** of I. Reifsnyder Son & Co., Philadelphia, have been elected members of the New York Wool Top Exchange.

W. M. Kichline, agent of the Ludlow, Mass., plant of the Ludlow Associates, was honor guest at a dinner of his associates there recently, on occasion of his departure on a six months' trip to survey the firm's factory in India.

Charles F. Broughton was reelected president and treasurer of the Wamsutta Mills, New Bedford, Mass., at the annual meeting of stockholders. The balance sheet showed net earnings of $69,559. **Otis M. Dunham** was elected clerk; the following were named to the board of directors: **Mr. Broughton, Oliver Prescott, Otis Seabury Cook, Elmer A. MacGowan, Aretas B. Carpenter, William T. Read** and **Patrick Sweeney.**

Edmund J. Brandon, of the legal firm of Burns and Brandon, Boston, was named trustee of creditors of Taber Mill, New Bedford, Mass., at a meeting held in New Bedford recently, the amount of the bond being set at $100,000.

Robert R. Jencks of Pawtucket, R. I., was reelected president of the Kilburn Mills of New Bedford, Mass., at the annual meeting of stockholders of the corporation. **George B. Knowles** was reelected clerk and treasurer, directors named being **Henry L. Tiffany, Frank H. Metcalf, Mark M. Duff, W. Kempton Read, Mr. Jencks** and **Mr. Knowles.**

Clinton T. Andrews, formerly with Elliott Hosiery Mills, Hickory, N. C., has resigned to become local representative for the Phoenix Mutual Life Insurance Co.

J. A. McDougald has resigned as master mechanic at the Eastman, Ga., Cotton Mills.

CLINTON STARCHES

For All Textile Purposes

Manufactured by

CLINTON COMPANY

CLINTON, IOWA

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Have Your Personal Accident and Health Insurance with

Eastern Commercial Travelers Associations

Mutual Company—No Agents—No Branch Offices

(Massachusetts Co., Since 1894)

ACCIDENT POLICY PAYS

Accidental death	Weekly Disability
$5,000—$10,000	$25.00—$50.00

Estimated Annual Cost $15.00

HEALTH POLICY PAYS

$25.00 Per Week	$10.00 Per Week
For Confining Sickness	For Non-Confining Sickness

Estimated Annual Cost $18.00

No policy is ever cancelled, rate increased, or benefits reduced on account of age!

TRAVELING NOT NECESSARY

WE INSURE ALL PREFERRED RISKS

JOHN S. WHITTEMORE, *Secretary-Treasurer*

80 Federal Street, Boston

J. C. Webber, formerly of A. D. Julliard & Co., New York, has been appointed manager of the gray goods department of the Merrimack Mfg. Co., New York.

Clifford W. Beck, graduate of the New Bedford, Mass., Textile School, class of 1936, has been appointed assistant technician in the plant laboratory of the Dunlop Tire and Rubber Co. at Utica, N. Y. Previously he was with the U. S. Testing Co. in Hoboken, N. J.

Donald W. Lee, formerly with Burson Knitting Mills, has joined the Asheboro (N. C.) Hosiery Mills.

Obituary

Ridley Watts, aged 65, retired cotton textile executive, and founder of Ridley Watts & Co., New York, died Dec. 31, at Morristown, N. J. He spent half a century in the textile industry including 30 years with Grinnell Willis & Co., New York, cotton goods commission house.

Thos. A. Caulfield, aged 43, credit manager, American Viscose Corp., New York, and vice-president of the Silk & Rayon Credit Association, died Dec. 18 at a New York hospital.

Anthony S. Anderer, aged 65, who served 42 years with Deering & Milliken & Co., New York, latterly as chief clerk, died recently in New York.

Fred S. Hunt, one of the organizers of the Virginia Woolen Co. of Winchester, Va., and associated with the Winchester Woolen Co. died there recently.

Julius A. Cline, aged 81, retired hosiery manufacturer and former owner of Hickory (N. C.) Hosiery Mill, died Dec. 9 in that city.

Wm. A. Stearns, aged 80, president of Stearns & Foster Co., Lockland, O., died Dec. 12, in Cinicinnati, O.

George A. Stafford, aged 70, president of G. A. Stafford & Co., cotton piece good exporters, New York, died Dec. 13, in New York.

Richard Grant, aged 73, formerly credit manager, Spool Cotton Co., New York, died Dec. 15 at his home in New York, of injuries suffered in an accident.

Adolph C. Schubert, aged 54, overseer of the spinning department, Ayer Mill of the American Woolen Co., Lawrence, Mass., was killed last month in an accident at the mill.

H. H. McIntyre, aged 48, formerly chairman of the board of the old Hunter Mfg. & Commission Co., New York, died Dec. 9, at New Rochelle, N. Y.

Thos. J. McGann, aged 53, vice-president and comptroller of James Talcott, Inc., New York, factors, died Dec. 26 at his home in Brooklyn, N. Y. He had been associated with the Talcott firm for 38 years.

E. C. Barnhardt, aged 73, former textile manufacturer whose company now is part of Cannon Mills Co., Kannapolis, N. C., died in Concord, N. C., last month.

L. W. Thomason, aged 63, southern district manager of the New York & New Jersey Lubricant Co., with headquarters in Charlotte, N. C., died Dec. 30 in Baltimore, Md., where he was undergoing treatment. Mr. Thomason was very well known in the cotton textile industry.

Chas. W. Kilbourn, aged 80, former president of Interwoven Mills, Inc., Martinsburg, W. Va., died recently.

Hollie B. McCormac, aged 62, textile manufacturer and industrial leader, who has been the president and general manager of Virginia Woolen Co. (Winchester, Va.) and Berkeley Woolen Co., of Martinsburg, W. Va., died Dec. 11 at Winchester.

Wellington Rindge, former general manager of Parker, Wilder & Co., New York, died Dec. 8, at his home in Boston.

Henry T. Fleitmann, of the textile firm of DeWitt, Fleitmann & Co., New York, and vice-president and director of Fleitmann Textile Corp., New York, and other textile firms, died recently in New York.

C. W. Bangle, president of the Bangle Belting Co., Greenville, S. C., died recently in that city.

Sidney Hill Hamrick, aged 90, died recently at Shelby, N. C. For many years Mr. Hamrick was president of the Ella Mills at Shelby.

Mrs. Mildred E. Leininger, aged 46, who had operated Leininger Knitting Mills, Orwigsburg, Pa. since the death of her husband, G. Edgar Leininger, died there recently.

George F. MacFarlane, aged 69, for twenty-seven years general manager of the Wilkes-Barre Silk Co., Wilkes Barre, Pa., until his retirement four years ago, died recently at his home in Kingston, Pa.

Albert Newton Brittain, aged 71, Palmetto, Ga., for many years associated with the Bradley Knitting Mills, Delavan, Wis., as their traveling representative, died recently.

Edward Aborn Greene, aged 81, for many years associated with the Clyde Bleachery & Print Works, Riverpoint, R. I., died at Providence on Nov. 26.

John Speed, aged 63, president Jas. Speed & Co., Inc., Boston, Mass., American representatives of the woolen machinery lines of John Hetherington & Sons, Ltd., Manchester, England, and of Wilson & Co., and Barnsley, Ltd., Barnsley, England, died at Lawrence, Mass., Dec. 12.

Frederick H. Allen, aged 68, son of the late John Allen, founder of the J. B. Allen Knitting Mills, Germantown, Pa., and associated with that firm for many years, died recently there.

John F. Seifert, aged 75, for many years superintendent of the W. H. Prendergast and Belfort Woolen Mills, Chepacket, R. I., died there recently.

Alex Marshall, for many years paymaster at the Suncook Mills, Suncook, N. H., died in Hanover, that state, recently.

John W. Pead, aged 84, a former agent of the Middlesex Mills in Lowell, Mass., died in Wilton, N. H., recently.

Alanson Rittenhouse Brewer, aged 48, vice president and secretary of the Dodge-Davis Manufacturing Co., Bristol, N. H., died recently.

Paul Winthrop Viets, aged 43, industrial relations manager of the Plymouth (Mass.) Cordage Co., died recently.

George J. Stengel, for many years head designer for the Alexander Smith & Son carpet plant, Yonkers, N. Y., died recently at Ridgefield, Conn.

Dr. Gardner Chase Anthony, aged 80, for 29 years dean of the Tufts College Engineering School, and formerly connected with the Rhode Island School of Design as director of its mechanical department, died at New Rochelle, N. Y., recently.

John T. Cunneen, for 30 years superintendent of the Stevens Mfg. Co., Fall River, Mass. carding department, died there recently.

Troy E. Hall, aged 32, foreman of the Clinchfield Mfg. Co., Marion, N. C., was killed in an automobile accident near that city Dec. 4.

James Gainey, aged 78, retired superintendent of the Collin Mills of White Bros., Inc., Winchendon Springs, Mass., died recently. He retired in 1930 after 55 years in the mills.

John P. Welpley, for many years master mechanic at the Elliot Manufacturing Co., died recently in Manchester, N. H.

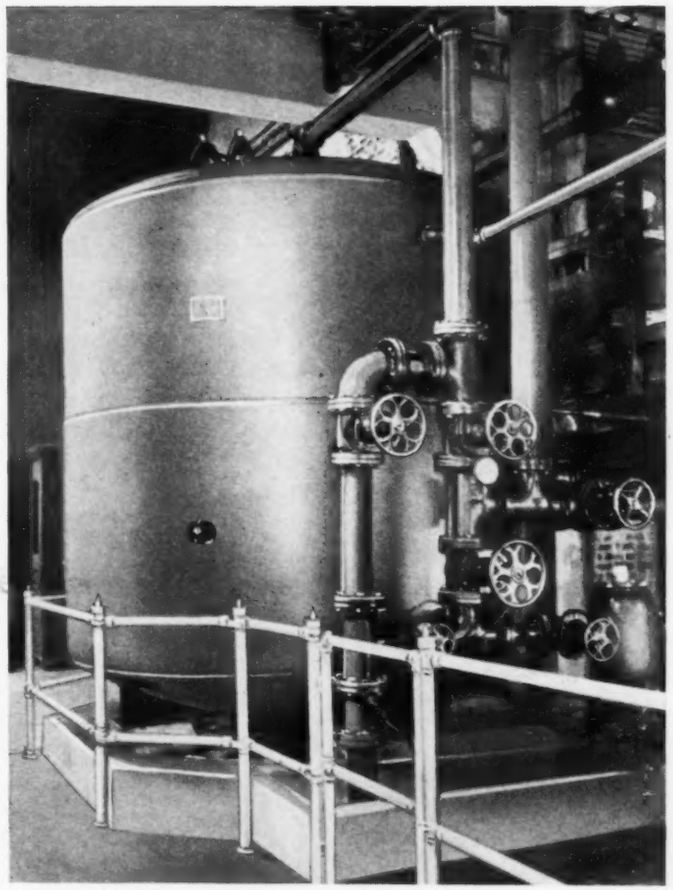
Claude A. Ragan, vice-president of the Eastman (Ga.) Cotton Mills, died recently.

W. Sully Griffin, aged 60, secretary-treasurer and general manager of the Parker Hosiery Mill and Dye Works at Portsmouth, Va., died recently while on a hunting trip near Holland.

Broadus E. Willingham, aged 75, Macon, Ga., founder and president of the Willingham Cotton Mills, Macon, until 1918, when he turned the business over to his son, Broadus E. Willingham, Jr., died recently at Macon.

Edward C. Allen, aged 67, president and general manager of the Special Fabrics Co., Sayles Bleachery affiliate, Saylesville, R. I., died at Providence, R. I., recently. He had been with the company 25 years.

Benjamin L. Sanders, aged 41, executive manager of the J. W. Sanders' Cotton Mills, Inc. with plants in various parts of Mississippi, died at Jackson, Miss., recently. He was the son of the late J. W. Sanders, prominent cotton textile plant owner.



INVERSAND WATER SOFTENER AT GLOBE DYE WORKS, PHILADELPHIA
MANUFACTURED BY HUNGERFORD & TERRY, INC.

Why Soften Water?

Globe Dye Works' own answer to this question should be of interest to every textile finishing concern.

"Hungerford & Terry, Inc.,
Clayton, N. J.

Gentlemen:

Our experience with your water softener system since installation about two months ago has been very satisfactory. We have saved considerably on soap which is used in many of our processes and it seems that we have been more trouble-free of many of the difficulties that beset a dye house.

We are well pleased with the manner in which this equipment was installed and our experience so far indicates that the installation of the softener will be well justified.

Yours very truly,
Globe Dye Works
Horace T. Greenwood

The INVERSAND water softener in the Globe Dye Works is operating on Philadelphia City Water which varies in hardness from 2 to 5 grains per gallon. The softened water is uniformly crystal-clear and 100% SOFT.

HUNGERFORD & TERRY, Inc.

CLAYTON, NEW JERSEY

WATER PURIFICATION PLANTS
DESIGNED • CONSTRUCTED • GUARANTEED

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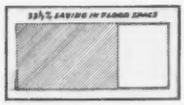
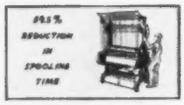
PACKAGE MULE OFFERS THIS

6 POINT PROGRAM

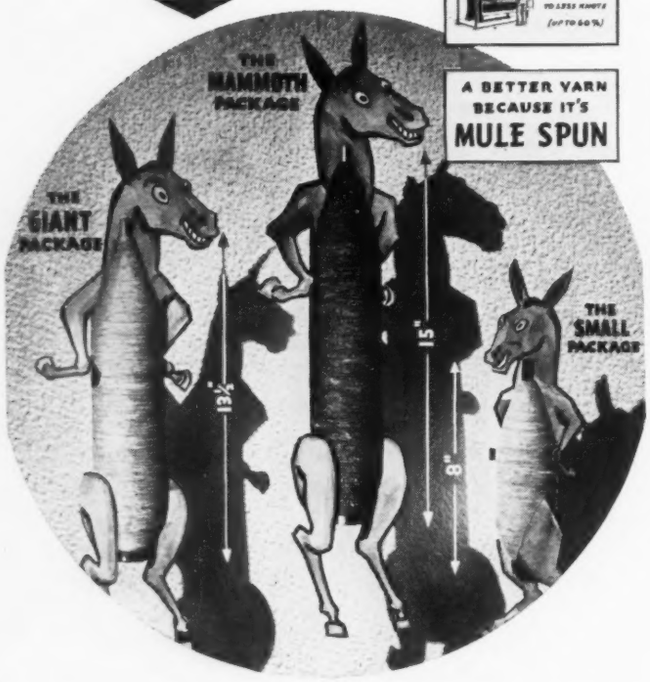




THINK HOW MUCH MORE

OUR NEW **MAMMOTH**

PACKAGE MULE OFFERS



A BETTER YARN BECAUSE IT'S **MULE SPUN**

The MAMMOTH Package is 15" long overall and will hold up to 14½ oz. of yarn, 7¼ times the amount held by the small mule package. It will not fit in to the manufacturing scheme of every mill, but where it will it offers even more important reductions in spinning, spooling and burling costs than does our GIANT Mule Package.

The increase in spinning production and saving in floor space are due to the larger package (involving less doffs) with no decrease in spindle speed; the reduction in spooling time to the larger supply; and the reduced burling cost to less knots.

The reduction in carding cost is due to the fact that any properly built mule will handle a coarser roving than any other spinning method.

Add to these advantages the fact that vastly improved design and modern metals enable all the latest J & B mules to surpass the quality for which mule spinning is already justly famous and to reduce maintenance cost and the MAMMOTH Package Mule merits your prompt and careful investigation.

Tell us your production requirements and we will tell what this latest advance in mule spinning can do for YOU.

JOHNSON & BASSETT, INC.

WORCESTER, MASS.

Canadian Representative: W. J. Westaway Co., Ltd., Hamilton, Ont.

MILL NEWS

Cotton Mill News

Pepperell Mfg. Co., Opelika, Ala., has completed installation of new lighting equipment in weave room, comprising 52 Cooper-Hewitt high-power lighting units.

Royston (Ga.) **Spinning Mill** has completed the installation of 168 looms and auxiliary equipment for corduroy production, and will give employment to about 160 persons.

Martha Mills, Thomaston, Ga., textile division of the B. F. Goodrich Co., have expended $1,500,000 on an expansion program and machinery changes in line with a plan to use cotton exclusively in the tire cord manufacture.

North Georgia Mfg. Co., Toccoa, Ga., recently organized, has taken over former local Capps Cotton Mill, idle for some time, and will remodel and equip for production of cotton thread.

Flax & Linen Co., Baltimore, Md., will erect a plant for production of linen cloth and high grade paper, near Fresno, Calif. Flax grown in Southern California will be used.

Conant, Houghton & Co., Inc., division of the United Elastic Corporation, Littleton, Mass., has completed an addition to its plant in the form of a main floor and basement about 70 ft. x 110 ft.

Continental Elastic Corp., New Bedford, Mass., has leased a portion of former local plant of the Nashawena Mills, and will equip for production of braided elastic fabrics.

Wamsutta Mills, New Bedford, Mass., reports net profit for year ended Sept. 30, 1937 of $69,559 against $156,789 in previous year.

Nashua (N. H.) **Mfg. Co.** reports a $3,000,000 increase in net sales to $14,453,567 during the year ended Oct. 31, 1937. The company's net profit was $553,591, compared with a loss of $21,203 in 1936.

Randolph Mills, Franklinville, N. C., is constructing an addition which will double the floor space of inspection department at plant No. 2.

Norlina (N. C.) **Cotton Mill, Inc.,** recently organized with capital of $100,000, plans operation of local mill. Main offices of company will be located at Gastonia, N. C. It is headed by J. L. Gray, Sr., and Jr., and W. C. Rustin, all of Gastonia.

Norwood (N. C.) **Mfg. Co.** —L. D. Coltrane and R. E. Jones, both of Concord, N. C., have been appointed receivers for this company.

Entwistle Mfg. Co., Rockingham, N. C., reports net profit for year ended Sept. 30, 1937 of $110,505 against $14,250 for previous year.

Rosemary Mfg. Co., Roanoke Rapids, N. C., has superstructure under way for new three-story mill addition and will have unit ready for equipment early in 1936. It will cost about $70,000. J. E. Sirrine & Co., Greenville, S. C., is engineer.

Wade Mfg. Co., Wadesboro, N. C., is completing installation of new equipment, including an additional beam and package dyeing machine unit, by Gaston County Dyeing Machine Co., Gastonia, N. C.

Leward Cotton Mills, Worthville, N. C., has installed modern long-draft spinning, high speed warping, automatic looms, etc.

Virginia Towel Mills, Inc., Unity and Leiper Sts., Philadelphia, Pa., have arranged for purchase of one of buildings of former Greer Mills, Torresdale Ave. and Gillingham St., totaling about 8,000 sq. ft. of floor space, and will use for local plant.

Narragansett Cotton Mills, Inc., Apponaug, R. I. Dissolution is allowed under decree entered in Supreme Court.

Appleton Co., Anderson, S. C., reports net profit for year ended Oct. 31, 1937 of $549,387, compared with net of $325,758 the previous year.

Orr Cotton Mills, Anderson, S. C., is installing 22,000 spindles of new Whitin long-draft spinning.

Clinton (S. C.) **Cotton Mills** are installing 165 Draper looms that the company recently purchased from a mill at Burlington, N. C.

Virginia Mfg. Co., Fork Shoals, S. C., has begun a renovation program which will cost $75,000. Four new roving machines and long-draft spinning equipment are being installed and 4,400 new spindles will replace 5,200 old style spindles.

Springs Cotton Mills, Fort Mill, S. C., have superstructure under way for three-story addition to local No. 1 mill, 100 x 150 ft. It will involve installation of looms and auxiliary

MILL NEWS

equipment. Cost estimated close to $100,000.

Mollohon Mfg. Co., Newberry, S. C., operated by the Kendall Co., Boston, Mass., has let contract to the Dixie Spindle & Flyer Co., Inc., Charlotte, N. C. Work will include the installation of Guillet taper-fitted roller necks on spinning rolls.

Standard- Coosa - Thatcher Co., Chattanooga, Tenn., reports net profit for year ended Sept. 30, 1937 of $340,109 on net volume of $6,824,038; preceding year, net profit of $241,870 on volume of $6,178,948.

Nashville, Tenn. — The Tennessee prison industries committee awarded contracts Dec. 3 for almost $250,000 machinery for proposed cotton and woolen mills to be placed in units at main prison formerly occupied by shirt manufacturing plants.

Dominion Textile Co., Ltd., Montreal, Que., has plans under way for addition to mill on Allard St., estimated to cost over $100,000, including equipment. Work is scheduled to begin early in 1938.

Wool Mill News

Gonic (N. H.) **Mfg. Co.** is making alterations and improvements in mill, including installation of new looms and other equipment.

Botany Worsted Mills, Passaic, N. J. has completed reorganization, absorbing the Botany Consolidated Mills, its former holding company. The company emerges under the same management headed by Col. C. F. H. Johnson which during the reorganization period of 5 2-3 years also effected a mechanical modernization of the plant. The RFC has granted a loan of $870,000 to forward plans for business development and expansion. The mill now employs about 3,500.

American Woolen Co., New York, omitted dividend on preferred stock for last quarter of 1937, "pending return of profitable operations."

Chatham Mfg. Co., Elkin, N. C., has been making improvements in mill, with installation of new equipment, including a combination package, beam and cone dyeing machine and vacuum extraction unit, with auxiliary machinery.

Penn State Worsted Mills, 4528 Worth St., Philadelphia, Pa., have purchased part of the former Greer Mills, Torresdale Ave. and Gillingham St., totaling about 35,000 sq. ft. of floor space, and will occupy for plant.

Charlottesville (Va.) **Woolen Mills** have begun construction of new addition to power house at mill, to include installation of a new 220-hp. water-tube boiler and auxiliary equipment. Expansion also will be carried out in dyeing department.

Winchester (Va.) **Woolen Co.** has approved plans for new power house at mill, for which superstructure will begin soon. It will cost close to $35,000, with boilers, pumps, and auxiliary equipment.

William Collie Woolen Manufacturer, Ways Mills, Quebec, Canada, has purchased Appleton (Ontario) Woolen Mills and has added to the equipment one new Whitin 60" x 60" card and two 96-spindle Whitin large - package spinning frames; also six C. & K. W-3 automatic looms.

Rayon and Silk Mill News

R. & K Silk Corp., Bethel, Conn., has been chartered to operate a local mill. Daniel Raub, formerly superintendent at the local mill of Bethel Silk Corp., is president, and George Kent, Bethel, treasurer.

Best Mfg. Co., Gainesville, Ga., recently organized, has awarded general contract to A. K. Adams Co., Atlanta, Ga., for new one-story silk mill, 80 x 100 ft., for which bids were closed Dec. 7, and will proceed with superstructure early in January. New unit will be equipped for silk yarn production and will represent an investment of $150,000.

Maryland Silk Mill, West Warren, Mass., was bought by Miss E. A. Keegan, mortgagee, when property was put up at auction on Nov. 29.

Sapona Cotton Mills, Inc., Cedar Falls, N. C., have converted their No. 2 mill into a silk throwing unit for yarn production for the Acme Hosiery Mills, Asheboro, N. C., an affiliated interest. A part of output will be used by the McCrary Hosiery Mills, Inc., Asheboro.

Central Falls (N. C.) **Mfg. Co.** has installed additional looms for production of rayon goods.

Royal Weaving Co., Paw-

RYERSON Certified STEELS

● Ryerson has always carried only the higher quality steels. Now, after years of planning, they bring you Certified Steels — steels of known quality—with year after year uniformity. Special quality and service features help users secure best results. For instance, alloy bars are of selected chemical analysis. They are tested for heat treatment response. Complete data on every bar is sent the customer to guide in treating the steel. We believe you will be interested. Write for booklet F-7, which tells the complete story. Joseph T. Ryerson & Son, Inc. Plants at: Chicago . . . Milwaukee . . . St. Louis . . . Cincinnati . . . Detroit . . . Cleveland . . . Buffalo . . . Boston . . . Philadelphia . . . Jersey City.

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OLD FAITHFUL Established 1835

•EMPIRE CRAYONS for Textile Mills

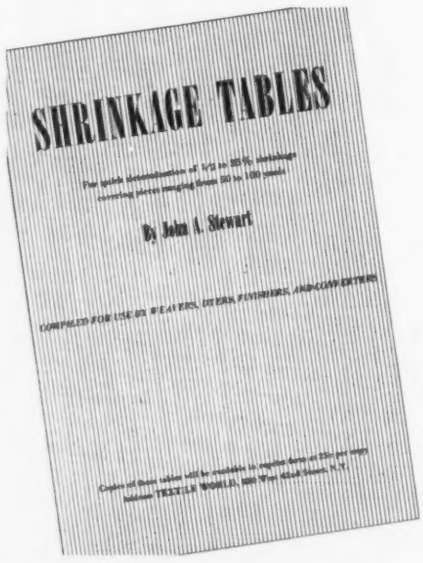
EMPIRE Textile Mill Crayon is a member of the family of "Old Faithful" Products. These crayons are serving the textile industry well and profitably. They are unexcelled for marking the roving and are a necessity in cotton, woolen, silk, and other textile mills. Sticks are 4" long and 1" in diameter, 18 colors to choose from. Get our new Color Chart—free.

• *Reg. U. S. Pat. Off.*

THE AMERICAN CRAYON COMPANY
SANDUSKY, OHIO NEW YORK

ANNUAL REVIEW & FORECAST NUMBER

February 28, 1938



FINGER-TIP CONTROL

for:—

Weavers, Dyers Finishers, Converters

No need to waste time figuring shrinkage. SHRINKAGE TABLES compiled by John A. Stewart, first published in the October issue of Textile World, are now available in reprint form at 25¢ per copy. Use them for quick determination of ½% to 25% shrinkage on pieces ranging from 50 to 100 yards.

Enjoy finger-tip control of piece goods shrinkage by having SHRINKAGE TABLES at your finger-tips.

Use the coupon below.

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Gentlemen:

I want to save the time I now spend figuring shrinkage. Please send me .... copies of SHRINKAGE TABLES by John A. Stewart at 25c per copy. I enclose (stamps) (coin) (check) for $.....

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To Mills requiring many copies the price is $2.50 per dozen.

MILL NEWS

tucket, R. I., has been acquired by Jerome A. Newman, 80 Broad St., New York, N. Y., and associates, which will take over the property at once. Operations will be continued at the plant as heretofore, giving employment to about 1200 persons in different departments. Joseph Ott, heretofore president and general manager, will continue with the new owners in a consulting capacity. Plans are under way for expanding and improving the mill.

Covington (Va.) Weaving Co. is installing additional machinery.

Industrial Rayon Corp. is working on plans for a new plant to be located either at Painesville, Ohio, or Covington, Va., for manufacture of cut staple rayon. The plant will have a capacity of 10,000,000 to 15,000,000 lb. a year. The new unit at Painesville, started some months ago, is nearing completion.

E. I. duPont deNemours Co., Rayon Division, Waynesboro, Va., has begun construction of a new recreational building for mill operatives at the local DuPont baseball park, for which general contract recently was let to the John C. Senter Construction Co., Roanoke, Va. It is estimated to cost about $75,000.

Knitting Mill News

Demopolis (Ala.) Hosiery Mills, Inc., has been incorporated with authorized stock of $10,000, amount paid in $4,000. The incorporators are Roulhac Gewn, B. J. Levy, J. M. Levy, A. E. Harper and S. W. Harper. The concern will build, equip, and operate a men's rayon hosiery mill.

Douglas (Ga.) Silk Products Co., has begun construction of a building in which 15 additional hosiery machines will be installed.

Columbia (Miss.) Knitting Mills have erected an addition and installed additional machinery, which will practically double the capacity of the plant.

G. H. Tilton & Sons hosiery plant in Tilton, N. H., now owned by W. Fred Duffy, is having new roofs installed on three buildings and repairs made on the power dam. An electric power station is contemplated.

Cranford Hosiery Mill, Asheboro, N. C., is installing 14 Reading full-fashioned machines, scheduled to be in operation this month.

Knit Products Corp., Belmont, N. C., is pushing superstructure for new two-story mill addition, for which general contract recently was let to C. M. Guest & Son, Anderson, S. C. It will be equipped for full-fashioned hosiery production, and will cost over $60,000.

Century Hosiery Mills, Inc., Burlington, N. C., recently organized with capital of $80,000, has work nearing completion on new local mill, occupying the former building of the Aurora Cotton Mill on Webb Ave. Initial operations will be given over to dyeing and finishing, with capacity of about 10,000 doz. pairs per week.

Hudson Silk Hosiery Co.'s plant on North Brevard Street, Charlotte, N. C., will install about $20,000 worth of machinery for the manufacture of boxes in which the hosiery manufactured by the company will be shipped.

Mock-Judson-Voehringer, Inc., Greensboro, N. C., will open a unit at Siler City, N. C. The building will be 110 x 210 ft. and will cost $40,000. The machinery for making the full-fashioned hosiery will cost $200,000.

Whisnant Hosiery Mills, Hickory, N. C., will install 10 new Komet knitting machines in January. Later 10 more of the same type will be installed.

Marvin Hosiery Mill, Inc., Lincolnton, N. C., recently organized with capital of $50,000, is equipping a local building for new knitting mill. Plant will represent investment of about $40,000. Company is headed by L. W. Gleeson, A. F. Arnold and T. N. James, all of Lincolnton.

Good - McCurry Hosiery Mills, Inc., Sevier, N. C., has been chartered to engage in and carry on a general knitting mill business. The authorized capital stock is $100,000, with $18,500 subscribed by M. L. Good, Reid Good and L. Reid McCurry.

Chatham Industries, Inc., Siler City, N. C., recently organized with capital of $100,000, plans operation of a local knitting mill. New company is headed by L. L. Wren and V. M. Dorsett, both of Siler City.

Walker Mills, Inc., recently chartered at Gastonia, N. C., will manufacture knit products and do dyeing and finishing in the mill building formerly occupied by the Ozark Mills.

MILL NEWS

Finer Full-Fashioned Hosiery Co., Charlotte, N. C., will add machines to double its capacity early in 1938. August Nordman is president and treasurer.

Thornton Knitting Mills, Denton, N. C., subsidiary of Maurice Mills, Thomasville, N. C., has erected a building and will employ 75 when operations start.

Federal Knitting Mills Co., Cleveland, Ohio, is arranging for the early liquidation of plant and equipment, with dissolution of company. A corporation has been formed with 5 shares of stock to preserve right to the name.

N. B. Miller of Philadelphia, has leased quarters in the Kulp Bldg., Hatfield, Pa., for manufacture of women's hosiery.

Rodgers Hosiery Co., Inc., Philadelphia, Pa., has completed the installation of 11 new full-fashioned hosiery machines at branch mill at Athens, Ga., representing investment of about $120,000.

Sport Wear Hosiery Mills, Inc., Philadelphia, Pa., have closed negotiations with the Etowah Industrial Committee, Etowah, Tenn., R. R. Webb, chairman, for construction of new one-story mill on local site, to be occupied under long-term lease.

Jack Feinberg Hosiery Mill, Inc., Rock Hill, S. C., plans to begin erection of new mill addition early in 1938, to be one-story, estimated to cost close to $25,000.

Excel Hosiery Mills, Inc., Union, S. C., recently organized, have awarded general contract to J. Q. Baughman, Union, for new one-story mill on local site on Hart Street, 60 x 80 ft., to be equipped with about 50 knitting machines and auxiliary equipment for cotton and rayon hose for men and women.

Berryville (Va.) **Mills, Inc.,** with maximum capital of $25,000, has been chartered to manufacture and deal in hosiery and other knit goods. Frank Paget, of Philadelphia, Pa., is president.

Sale Knitting Co., Inc., Martinsville, Va., recently organized with capital of $250,000, has superstructure under way on new five-story mill on Moss St., and will push work to early completion. Installation will include knitting and dyeing divisions, the former to be equipped with knitting machines furnished by Tompkins Brothers Co., Syracuse, N. Y. New mill will represent an investment of over $100,000, and will specialize in underwear. E. A. Sale is head.

E-Z Mills, Inc., Bennington, Vt., and Chattanooga, Tenn., has acquired the entire capital stock of the Ware Valley Mfg. Co., Inc., Ware, Mass. Operations will be continued at the mill as heretofore under the new ownership.

Processing Plant News

Griswold Textile Print, Inc., will locate in the former Aldrich Bros. plant in Moosup, Conn. Frank and Mary Ahern of Norwich are president and vice-president. The firm started screen-printing at Jewett City.

Lowell Bleachery, Boston, Mass., reports net profit for year ended Sept. 30. 1937, of $134,656 compared with $92,014 for previous fiscal year.

Standard Coated Products Corp., New York, N. Y., has been organized under State laws to take over property and assets of the Standard Textile Products Co., and manufacture Meritas and Sanitas oilcloth, in accordance with reorganization plans recently approved by the Federal Court. The Cliftex Corp. will carry on some of the other Standard operations. The Interchemical Corp. will own 51 per cent of the stock.

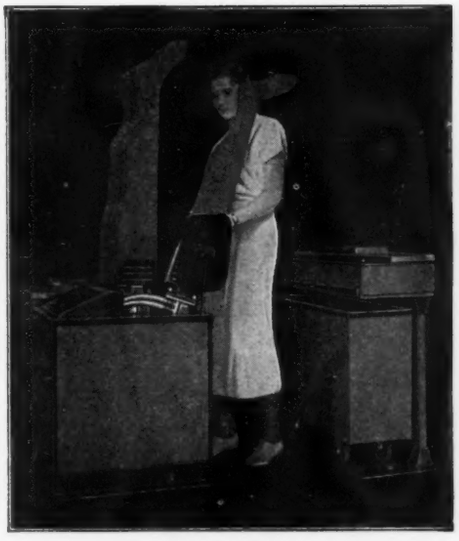
Hanes Dye & Finishing Co., Winston-Salem, N. C., has considerably increased its capacity by installation of additional modern bleaching and finishing equipment.

Bailey Dye Works, Inc., Philadelphia, Pa., has leased about 30,000 sq. ft. of floor space in mill now occupied at Jasper and Butler Sts., formerly the plant of the Lehigh Silk Hosiery Mill, and will use for dyeing and finishing.

S. D. Bausher & Sons, Hamburg, Pa., was sold at auction late in November. Real estate brought $33,600; machinery, etc., $29,873.

Imperial Printing & Finishing Co., Cranston, R. I., will be sold at public auction, at Mill St., Cranston, Tuesday, Jan. 18, and Wednesday, Jan. 19, by the firm of Bernard Magrill, L. S. Sanders, auctioneer, of Brooklyn, N. Y. On the first day selling will include the machinery and equipment, while the second day will be devoted to disposing of the real estate. The property may be examined Jan. 14 to 17, inclusive.

PARAMOUNT Dual Heat Hosiery Finishing Machine



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Compare this Machine with your present equipment. You will find that it requires less square feet of floor space per dozen than any existing method of finishing; less steam consumption — heating is direct; less power — a one-quarter horsepower motor operates the entire machine; less investment per dozen — reasonably priced; less upkeep — built to render years of service; and production possibilities with quality work that cannot be challenged.

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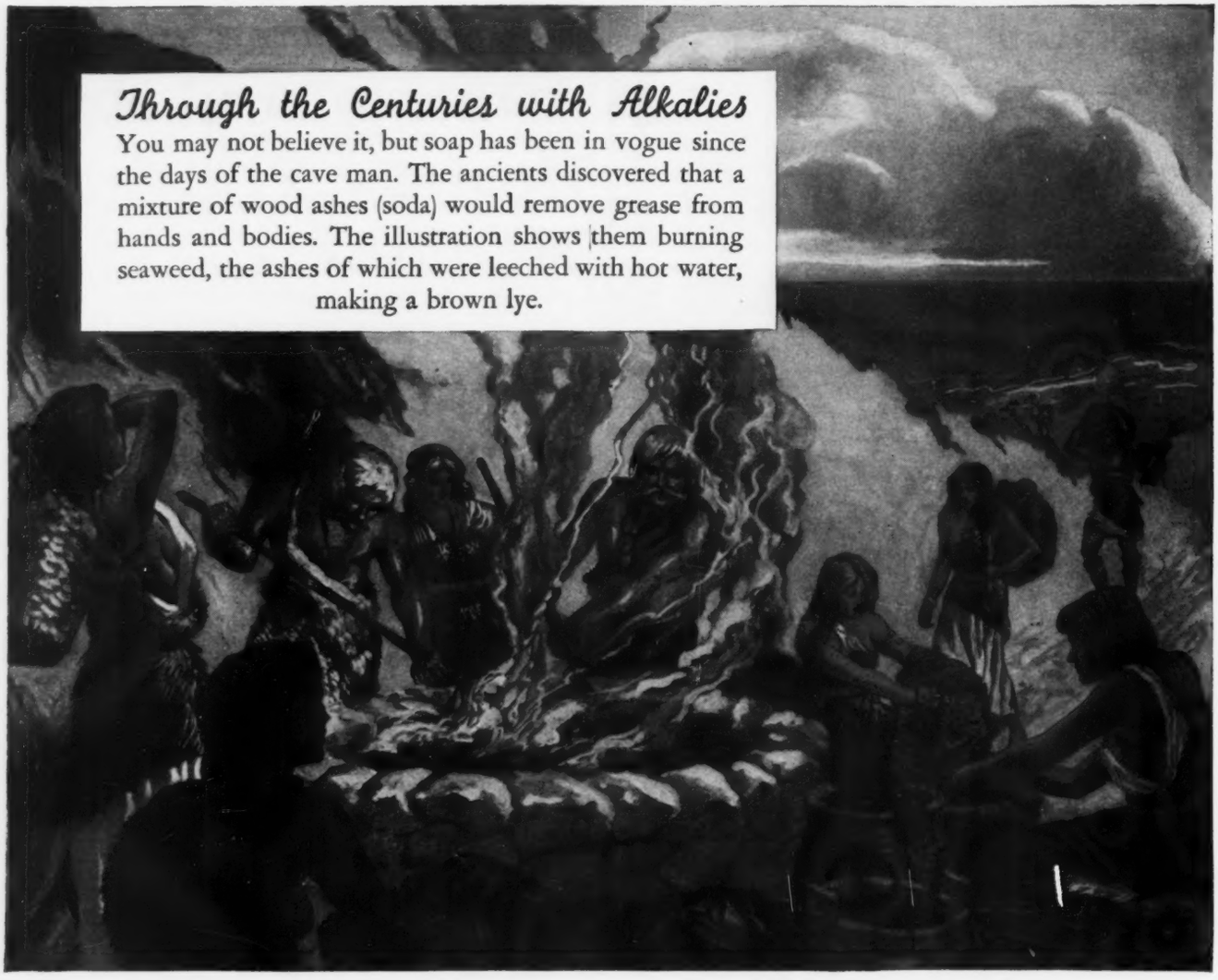
Through the Centuries with Alkalies
You may not believe it, but soap has been in vogue since the days of the cave man. The ancients discovered that a mixture of wood ashes (soda) would remove grease from hands and bodies. The illustration shows them burning seaweed, the ashes of which were leeched with hot water, making a brown lye.

Users of COLUMBIA Soda Ash, Caustic Soda, and other products know that here are man-made products which are the finest obtainable. To others, may we suggest that you lose no time in discovering for yourself the extreme uniformity, . . . the freedom from variability . . . and from impurities . . . that characterizes all COLUMBIA ALKALI CORPORATION products. And COLUMBIA Service has been found just as dependable as the alkalies which bear its name.

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